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ABSTRACT

Sex equity priorities of the University of Wisconsin-Stout Center for Vocational, Technical, and Adult Education (VTAE) were addressed through the design and implementation of a statewide model addressing nontraditional enrollments. The program area of electronics was recommended for the following reasons: (1) market data indicate a shortage of trained workers; (2) electronics includes highly technical emerging occupations; (3) electronics has a high placement rate and opportunity for advancement; (4) statewide program enrollments have dropped 17 percent since 1984-85; and (5) program enrollments average 90 percent male. The electronics program area needed a target program to increase participation by female students. A comprehensive 3-year draft model addressed three major components: enrollment, retention, and placement of female students. Components identified by an advisory board as essential for a successful program were as follows: administrative commitment; a staff coordinator position; an advisory board composed of persons from the training institutions and community; and a comprehensive assessment process to assist students in career selection. To increase retention, support services such as tutorial/counseling services, financial aid, flexible scheduling, continuing education, and remedial assistance were advised. (The bulk of the document consists of seven appendices: (1) advisory board materials; (2) a sample brochure for an electronics program targeted to women; (3) national project reviews; (4) materials concerning a VTAE Equity Network; (5) materials on advisory board organization; (6) discussion ideas for an initial advisory board meeting; and (7) minutes of a second advisory board meeting.) (NLA)

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Final Report

Project Number 30-101-150-151

Research Project Conducted for the

Wisconsin Board of Vocational, Technical and Adult Education

by the

Center for Vocational, Technical and Adult Education

University of Wisconsin-Stout
218 Applied Arts Building
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Design for Equity: Women In Electronics

June, 1991

CE 052524

Project Number 30-101-150-151

Design for Equity: Women In Electronics

Project Director
Lorayne Baldus

Dr. Howard Lee and Dr. Orville Nelson, CVTAE Co-Directors

Center for Vocational, Technical and Adult Education

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- Marge Wood, Apprenticeship Consultant, WI Board of Vocational, Technical and Adult Education
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- Robert Bales, Electronics Instructor, Northeast Wisconsin Technical College
- Michael Flanagan, Electronics Instructor, Northeast Wisconsin Technical College
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- Ken LaCount, Associate Dean, Northeast Wisconsin Technical College
- Elizabeth Whalen, Counselor, Northeast Wisconsin Technical College
- Diane Vande Hei, Electronics Student, Northeast Wisconsin Technical College
- Sue Widmer, Electronics Technician, Green Bay, Wisconsin
- Sue Today, Supervisor of Guidance Career Education and Equity Coordinator, Green Bay Public Schools
- Chris Rogers, In-Service Coordinator, UW-Green Bay
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Lorayne Baldus
Project Director

Abstract

The purpose of this project is to address VTAE sex equity priorities through the design and implementation of a statewide model addressing nontraditional enrollments in a planned and systematic approach. Past experiences show that, in order to make equity work, efforts must be targeted on specific strategies and populations and yet conducted in an overall framework for organization, action and change.

The program area of electronics was recommended for the following reasons:

1. Market data indicate a shortage of trained workers in this high-demand field.
2. Electronics includes such highly technical emerging occupational areas as electronics communications, electronics design and packaging, telecommunications and biomedical electronics.
3. It has a high placement rate and opportunity for advancement.
4. Statewide program enrollments in electronics have dropped 17 percent statewide since 1984-85.
5. Program enrollments average 90 percent male statewide.

The electronics program area needed a targeted program to increase participation by female students. The model was designed to be applicable to other trade and industry areas as well.

A three-year project was planned. In the first year the draft model was to be developed and finalized with field testing in the second year. Dissemination of the model to other VTAE districts would occur in the third year with adaptations for other identified trade and industry areas. A comprehensive draft model was researched and developed addressing three major components; enrollment, retention, and placement of female students.

An advisory board was formed and the members provided invaluable assistance in the discussion and determination of issues to be addressed in formulating a comprehensive model. The components identified by the Advisory Board as essential for a successful program are: 1) administrative commitment; 2) a staff position for a coordinator; 3) an advisory board composed of a cross-section of persons from the training institution and community; and, 4) a well-designed program that includes a comprehensive assessment process designed to assist students in career selection; preparation for training, success, and retention; and, ultimately, job placement in a satisfying career. (Appendix A)

The consensus of the Advisory Board was that a comprehensive assessment and career planning process would assist all students in retention and placement within a satisfying career. To increase retention for all students, they felt it was important for instructors to intervene for those students needing remediation; to be sure that tutorial and support services were fully utilized. Identified as important to the success of this model was an "all school" effort to bring together counseling/tutorial services, financial aid, flexible scheduling, continuing education, remedial services and the public relations office.

Northeast Wisconsin Technical College (NWTC) has submitted a proposal to the State Sex Equity Consultant for funding to implement some of the recommendations made by the Advisory Board. A brochure has been developed to inform women about the electronics program at NWTC with the purpose of recruiting women for the year, 1990-91. (Appendix B) The model developed is one that is applicable to all trade and industry areas as it focuses on helping the student through use of available services, counseling, tutoring and remedial courses, as well as career selection and placement.

Introduction

Design For Equity: Women In Electronics, was a project designed to determine the components considered necessary to increase female participation and completion of the electronics program at Northeast Wisconsin Technical College, Green Bay, WI. The work sequence in developing the draft model included: (1) a search of relevant literature, materials, and national projects; (2) discussion with project directors; (3) formation of an advisory board; (4) conducting meetings and correspondence; (5) completion and dissemination of the draft model components; and, (6) printing and distribution of a brochure. The format for this report includes the three project objectives and describes how each objective was developed and met, two graph illustrations of the interrelationship of model components, summary, recommendations, and appendices.

A proposed project for 1991-92 to implement the advisory board recommendations was submitted to NWTC. It consisted of six major areas; faculty in-service, publicity, technology skills workshop, support groups, use of role models, industry tours, and a comprehensive workshop for prospective students, parents, and counselors. Subsequently, the project was revised by NWTC and submitted to the WBVTAE Sex Equity Consultant for funding. A brochure designed to interest females in the electronics program was printed and will be distributed within the Green Bay area.

Project Objectives

1. Conduct a literature search of related model programs and materials and conduct interviews with staff of programs that address nontraditional recruitment and retention in the trade and industry area.
2. Establish and utilize a working advisory committee of WBVTAE and district trade and industry electronics program staff, equity specialists and industry representatives.
3. Identify and develop the components of the model in draft form utilizing the components identified to address recruiting, enrolling and retaining females in the electronics programs.

Objective I. Conduct a literature search of related model programs and materials and conduct interviews with staff of programs that address nontraditional recruitment and retention in the trade and industry area.

A search of literature and national projects funded through federal grants was conducted. The findings indicate several components that must be included for a project to be successful. They are:

- Available jobs that offer good wages, growth potential, interesting work, and a healthy environment that addresses work climate, adequate facilities and employer/employee relationships.
- Person designated as a coordinator to design and implement a program that includes:
 - Curriculum evaluation and design
 - Marketing/recruitment
 - Career planning/assessment
 - Orientation/screening
 - Preparatory services
 - Training with comprehensive course descriptions
 - Support services
 - Placement/follow-up.
- Advisory committee comprised of administrators, faculty, students, role-models, and representatives from business and industry.

All project directors contacted recommended the preceding components. A project director at Thief River Falls, Minnesota, very successful in recruiting minority women of all ages, emphasized the importance of role models and one-to-one recruiting. The "B-FIT" project director at Portland Community College, Portland, Oregon, felt that assessments, preparatory services and support services were essential, but that attitude and a desire to complete the program were determining factors rather than math and science abilities. The summarized resource materials are contained in Appendix C.

To provide data from Wisconsin VTAE districts, a letter was sent to all sex equity network team members who participated in the 1989-90, Building Gender Fairness Project. They were asked to send brochures from their respective electronics divisions and complete a short survey about their district's programs to enroll and retain women in nontraditional occupations. (Appendix D) The findings from the survey is that the districts responding have elements of assessments, career planning, support and remedial services in place, and need only to update, revise or provide for coordination to effectively utilize these services.

Objective II Establish and utilize a working advisory committee of WBVTAE and district trade and industry electronics program staff, equity specialists, and industry representatives.

The proposed project Advisory Committee members recommended were:

- T&I coordinator from NWTC
- Two NWTC electronics instructors (one from the in-school program and one an NWTC industry trainer)
- Factory training participant
- Student from electronics program at NWTC
- DPI Gender Equity Cadre representative
- Green Bay School District representative
- NWTC Displaced Homemaker Program representative
- Educational resource people outside the district
- Industry representative
- WBVTAE apprenticeship consultant

The responsibilities of the advisory committee were to: 1) provide input into the model development process; and, 2) review and critique the developed draft model and materials.

Conference calls with John Pogorelc, Dean of Trade and Industry, NWTC, were made during August and early September. Upon receipt of Advisory Board member names, a letter and an advisory board acceptance form was sent September 10, 1990, inviting them to the first meeting, October 11, 1990, in Green Bay, Wisconsin. A second letter and meeting agenda was sent September, 20, 1990. (Appendix E)

The first Advisory Board meeting had fifteen members present. A book was prepared for participants and contained a list of participants, relevant working materials and current projects from other states that are of a similar nature. The session consisted of the following format:

- Discuss purpose of the project
- Present background information on equity issues
- Determine why enrollments have not grown
- Identify projects and strategies that have worked
- Determine components needed to recruit, retain and place females in electronics in Green Bay, Wisconsin.

The meeting ended with a brainstorming session on components to be included within the model.

A draft form of the model components discussed at the Advisory Board meeting, the results of the brainstorming session, and a registration form were sent to the members prior to the December, 13, 1990 meeting in Green Bay. (Appendix F) At the second meeting, participants discussed issues currently impacting on the electronics program and the components necessary for a

Design for Equity: Women in Electronics

Model Components



Figure #1

Design for Equity: Women in Electronics

Model Components

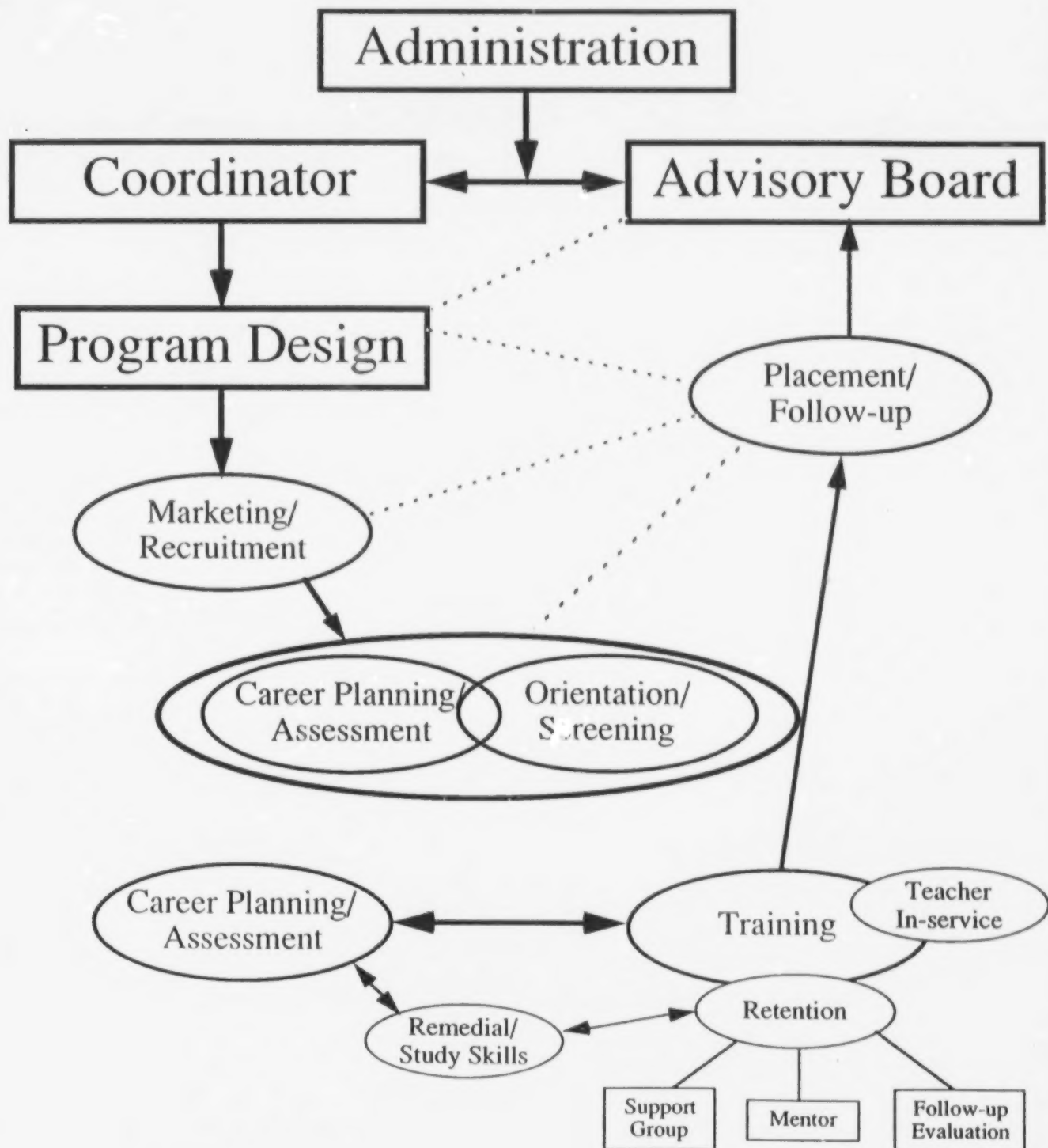


Figure #2

successful nontraditional training program. (Appendix G) They determined that for the model to be successfully implemented, the greatest needs were:

- District commitment with funding for staff allocation
- Need to identify a coordinator
- Need for a strong advisory committee
- Pre-technical courses

They also summed up the components needed for a successful model:

- Linkages with industry-a guaranteed job at the end with promotional and career possibilities
- Industry/internships courses (similar to apprenticeships)
- Program coordinator is absolutely essential. Funding is needed to hire a coordinator
- A commitment from administration is essential or it will not happen
- Women have to feel welcome in the program or they will not enter or stay
- Strong recruitment efforts
- Adequate information regarding careers and the competencies needed
- Access to persons with authority-a female authority figure for female students
- Pre-tech courses need to be an integral part of curriculum and taught by full time instructors. It cannot be a secondary program, there must be articulation between continuing education and full time education.

The time line for implementation was discussed. Concern was expressed over the time needed to recruit, train and ultimately place women in jobs. Budgetary constraints and administrative commitment were immediate problems because of the need for coordination activities to revise and update curriculum and effectively utilize services available. The need is immediate as NWTC has but one female student in the second year program and three in the first year. Recommendations were made to use services currently available to retain those already in the program. Additional suggestions were made for advertising and recruiting females with educational backgrounds suitable for the electronics field. The long-range program is to structure all services to eliminate the excessive student drop out rate and attract women into the program. A short-term program will also need to be implemented to attract women and provide additional role models and peer mentors for future students. Subsequently, a brochure, with the purpose of increasing female enrollment in the NWTC electronics program in the fall of 1991, was designed with input from the Advisory Board Members. The final drafting and printing was completed at NWTC.

At the conclusion of the meeting, the Advisory Board revised the graphic model into a linear design, emphasizing the components determined to be essential. (Figure I)

Preparing Women For Technical Careers, a paper summarizing the meeting discussions, model graphics (Figures I and II), and the model components, were sent to all Advisory Board members December 18, 1990. (Appendix A)

Objective III: Identify and develop the components of the model in draft form utilizing the components identified to address recruiting, enrolling and retaining females in the electronics programs.

The purpose of this project was to research and design strategies, activities, and services that encourage women to enroll and continue in electronics and technical programs at NWTC, Green Bay, Wisconsin, and develop a draft model to achieve this purpose.. Based upon the research conducted and the model drafted, the rationale, objectives, and projected activities for a preliminary project proposal for 1991-92 were developed and submitted to NWTC. It was revised and

subsequently submitted to the WBVTAE Sex Equity Consultant for funding. This proposed project is designed to facilitate recruitment, retention, and placement of women in Northeast Wisconsin Technical College's technical programs. The design is based on the model developed by the Advisory Board and discussed under Objective II. (Figure 1) An amplified model depicting the integrated nature of all services was sent to the members following the December meeting. (Figure 2)

Although the goal of a draft model was obtained, the actual "how-to's" are not there, but are available through other sources. Several resource guides were collected and are available for loan through the Center for Vocational, Technical, Adult Education, UW-Stout. All of them contain valuable information that can be revised and utilized by individual VTAE colleges. The most comprehensive program model available for preparing women for nontraditional occupations is a book by Jo Shucat Sanders, The Nuts and Bolts of NTO. This manual was used extensively in the exploration phase of the Electronics Project and was an excellent resource. It addresses the needs of re-entry women by modifying the six basic goals of any vocational technical training; outreach, career exploration, enrollment, retention in training, placement, and follow-up. These factors alone will not ensure success. The NTO program must involve all administrative, instructional and support staff who are committed to equity and excellence. Inherent to the success of this model is the presence of a designated coordinator with paid faculty status.

The proposed project for NWTC consists of six major areas; faculty in-service, publicity, technology skills workshop, women's support group, role models, industry tours, and a comprehensive workshop for prospective students, parents, and counselors. Based on the amount of time available, a decision was made to focus on recruitment and retention. The project activities were designed to attain the following objectives:

1. Develop activities and services that enhance women's perceptions of their ability to successfully complete electronics and technical programs.
2. Design instructional activities that expand the math, science, and technical competencies of female students entering NWTC's electronics related careers.
3. Create activities and services that encourage and reinforce female students' selection of electronics and technology related careers.
4. Design a program that develops the competencies faculty members need to prepare instructional material, select texts, and create a classroom climate that is bias free.
5. Design a brochure and experiences that expand the knowledge and perceptions of career opportunities in electronics and technical areas.
6. Develop activities and services that facilitate the placement of women in full-time electronics jobs after graduation.
7. Evaluate the effectiveness of the activities, services and programs developed and conducted.

The project submitted by NWTC included many of these objectives, but was completed in a different format than the one proposed by CVTAE.

Summary

The four major components necessary for success are: 1) administrative support; 2) coordinator; 3) advisory board; and, 4) program design. Qualified students could move through the system from marketing and recruitment directly into training and placement. Those students who lack preparation or career certainty, would go through additional assessments, orientation, screening and remedial skill training. Teacher in-service and intervention skills were considered necessary to help retain students who are in danger of dropping from the program. Other support services in the form of support groups and peer mentors is extremely important in the retention of female students. Identified strategies for each of the model components are included in Appendix A.

The consensus of the Advisory Board is that a comprehensive assessment and career planning process would assist all students in retention and placement within a satisfying career. To increase retention for all students, it is important for instructors to intervene for those students needing remediation; to be sure that tutorial and support services are fully utilized. The greatest need is to coordinate for an "all school" effort, bringing together counseling/tutorial services, financial aid, flexible scheduling, continuing education, remedial services and the public relations office, to assist the student to successfully complete training and be placed in gainful employment.

A difficulty that VTAE Colleges face in implementing this model is the cost of released faculty time and possible program delays for students who need the additional counseling and skill building. The positive outcome would be a student with better academic preparation, a greater chance for retention and success, and ultimately, successful employment in the workforce.

Recommendations

The current situation of a high percentage of students entering the program with inadequate skills is a problem. Students may lack preparation in mathematics and technical knowledges and this contributes to the high drop-out rates. Without intervention or pre-technical preparation, many of these students will not complete the program. With many VTAE Colleges facing fiscal restraints, methods must be found to assist students to succeed. The following suggestions may help alleviate some of the student difficulties and assist them in course completion.

1. Institute a comprehensive assessment and career planning service with one person (preferably female) to counsel women interested in nontraditional occupations.
2. Provide and advertise tutorial services available, provide peer mentoring support services, and cluster women in the same classes.
3. Provide faculty in-service training to sensitize faculty to gender and racial bias and stereotyping
4. Reassess curriculum to reflect market training needs within respective VTAE Districts and restructure for presentation of difficult and technical course content.
5. Actively market the program through brochures and other media to appeal to a female audience, and provide industry tours and role models for additional career information.
6. Form and utilize an advisory board comprised of an industry representative, student role models and VTAE staff.

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2. Design for Equity: Women In Electronics Graphic Model

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Appendix A

CVTAE
CENTER FOR VOCATIONAL, TECHNICAL AND ADULT EDUCATION
715-232-1382

UNIVERSITY OF WISCONSIN
STOUT
MENOMONIE WISCONSIN 54751

December 18, 1990

Dear

Thank you for attending the Advisory Board Meeting. Enclosed are the materials we revised and developed that day; the rough draft of the statewide model, an outline of components within each category, and the rationale explaining the need for this model.

I would appreciate receiving suggestions, revisions, additions, or any comments you may have. Two copies have been sent to John Pogorelc for his use. We are looking at sources of funding to implement this program and will keep you informed.

Again, thank you for your excellent suggestions and assistance. Have a Happy Holiday.

Sincerely,

Lorayne Baldus
Project Director
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jb

Enclosures

Preparing Women For Technical Careers

Sometimes we get slightly different versions of the same reality. But once we get past the badly overused phrases like "the challenge of the 90's" and "the end of the millenium," the message is consistent:

- Between now and the year 2,000 nearly two-thirds of all new workers will be women; with minorities and recent immigrants, they will make up five-sixths of the net additions to the work force.
- At the same time, white males will represent only 15 percent of net additions to the labor force. (They represent 47 percent of the current work force.)
- The number of female-headed families has more than doubled, from 4.2 million in 1955 to 10.4 million in 1987.
- Female-headed families are five times as likely to be poor as two-parent families.
- Women make up the majority of those paid minimum wage and hold the lowest-paying jobs. This is 3-5 times as likely to be true of minority women than of white women.

In our preparation for a high tech work force, we are going to have to find a way to reach all students, particularly young women and minorities. We can no longer allow them to avoid or fail out of mathematics, science, and technology programs. Employers are going to need these skilled workers, and the student will need these technical skills even for entry-level jobs. It is essential to develop a program to prepare re-entry women students for technical careers.

Based upon research and statistics from the Wisconsin Vocational, Technical and Adult Education System, 1988-89, a proposal to develop a statewide model to enroll, retain and place nontraditional students in the trade and industry program area of electronics was funded by the the Wisconsin Board of Vocational, Technical and Adult Education. Former WBVTAE Trade and Industry Consultant, Jean Burns, recommended targeting the program area of electronics for the following reasons:

1. Market data indicate a shortage of trained workers in this high-demand field.
2. Electronics includes such highly technical emerging occupational areas as electronics communications, electronics design and packaging, telecommunications and biomedical electronics.
3. It has a high placement rate and opportunity for advancement.
4. Statewide program enrollments in electronics have dropped 17 percent statewide since 1984-85.
5. Program enrollments average 90 percent male statewide.

The electronics program area needs a targeted program to increase participation by female students. The model will be designed to be applicable to other trade and industry areas as well.

Northeast Wisconsin Technical College was selected as the test site because of the potential job placement of electronics graduates. A three-year project was designed. In the first year, a draft model was to be developed with input from the Project Advisory Committee and the Electronics Program Recommendation Committee.

The second year a draft model will be finalized and field testing will be conducted at Northeast Wisconsin Technical College (NWTC) with in-service to electronics staff as they implement the developed model. The Advisory Committee and Electronics Program Recommendation Committee will continue to review programs and make recommendations. In the third year, NWTC field test site staff will assist in disseminating the model to other VTAE Districts through a staff development component and the model will be adapted to other identified trade and industry areas.

A search of literature and national projects funded through federal grants has been conducted. The findings indicate several components that must be included for a project to be successful. They are:

- Available jobs that offer good wages, growth potential, interesting work, and a healthy environment that addresses work climate, adequate facilities and employer/employee relationships.
- Person designated as a Coordinator to design and implement a program that includes:
 - Curriculum evaluation and design
 - Marketing/recruitment
 - Career planning/assessment
 - Orientation/screening
 - Preparatory services
 - Training with comprehensive course descriptions.
 - Support services
 - Placement/follow-up
- Advisory Committee comprised of administrators, faculty, students, role-models, and representatives from business and industry.

The attached model lists, in order, the components identified by the Women In Electronics Advisory Board as essential to a comprehensive plan for the recruiting, retention and placement of women in nontraditional occupations.

Two advisory board meetings have been held. A statewide draft model, (Illustration I) was designed based on input from the Advisory Committee. The three most important components identified were; administrative commitment, a staff position for a coordinator, and a viable advisory board comprised of a cross-section of persons from the training institution and community.

Another essential component was a well-designed program that included a comprehensive assessment process designed to assist students in career selection, preparation for training success and retention, and ultimately job placement in a satisfying career. The program model as revised by the advisory board is shown in Illustration II.

Before marketing and recruiting can occur, all components of the training model, from testing, career planning, support and remedial services, and preparatory classes to the actual training and curriculum must be planned and in place. All VTAE colleges have elements of these components in place and need only to update, revise or provide for coordination to effectively utilize these services.

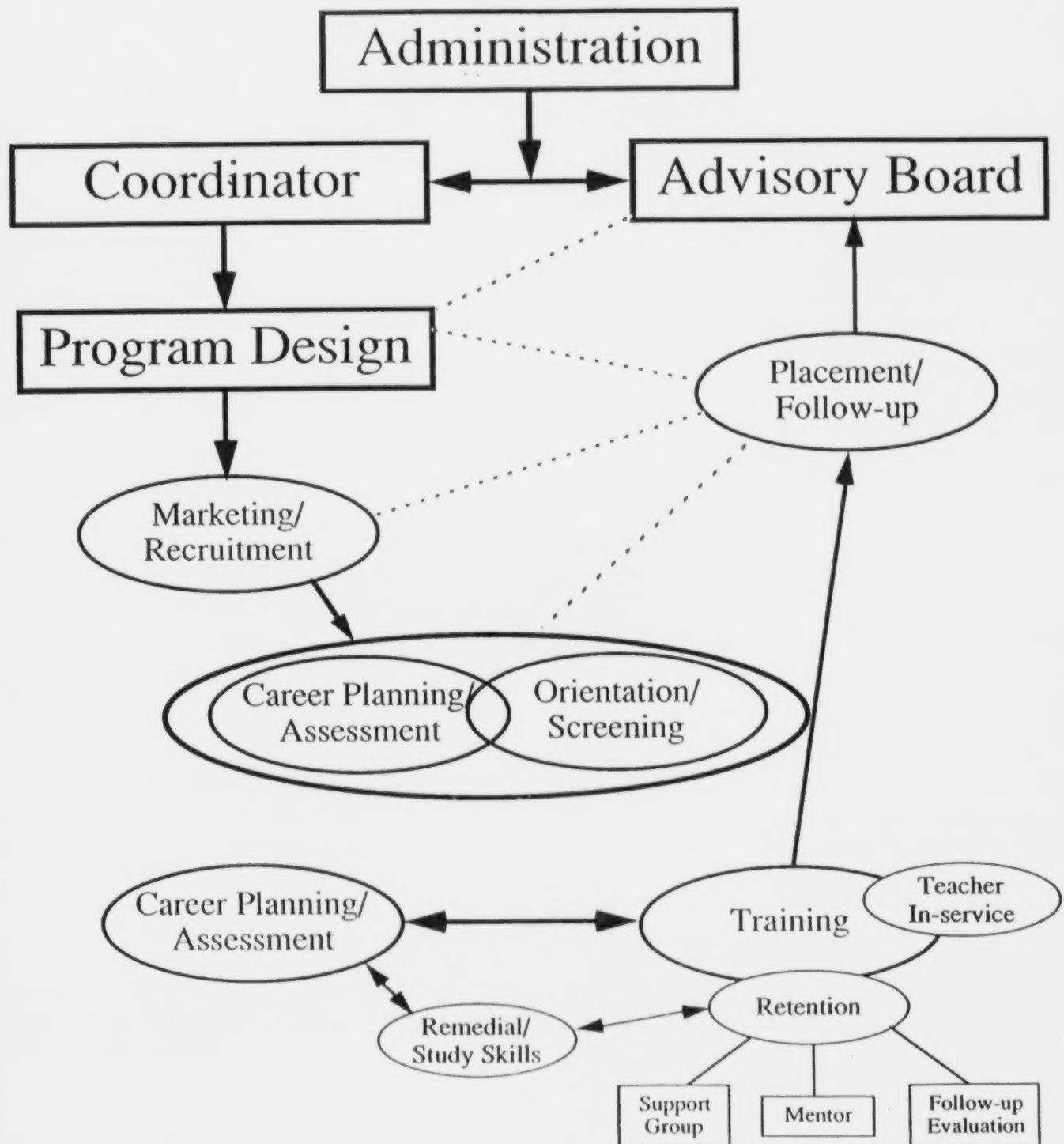
Design for Equity: Women in Electronics

Model Components



Design for Equity: Women in Electronics

Model Components



DESIGN FOR DIVERSITY: WOMEN IN ELECTRONICS MODEL COMPONENTS

I. Administrative Support

- Budget allocations
- Staff allocations
- Space commitment
- Philosophical support

II. Designated Coordinator

- Curriculum evaluation and design
- Marketing/recruitment
- Career planning/assessment
- Orientation/screening
- Preparatory services
- Training with comprehensive course descriptions
- Support services
- Placement/follow-up

III. Advisory Board-Establishment of Goals

- Expanded with women members
- Partner's in training program/industry representatives
- NTO student participation

IV. Program Design

A. Marketing/Recruiting

- Brochures/posters
- Publications
- Media news releases
- Video
- Advertisements
- Public and private sector agencies
- Trade unions
- Articulation, secondary schools and industry
 - High Schools
 - Career awareness night with parents, students, graduates and instructors
 - Articulation with math and science
 - Open house school-wide
 - CESA participation
 - Industry
 - Job placement
 - Cooperative placement
 - Internship/training opportunities
 - Shadowing
 - Scholarships (Second year financial aid with guaranteed employment after graduation)
 - Core people linkages/VTAE-Industry
 - Joint industry/school; buying of instructor

B. Career Planning/Orientation

- Assessments and diagnostic evaluation in math & reading
- Building self-esteem
- Financial planning/budgeting
- Financial aids availability
- Remedial skills/mini courses for math/reading improvement
- Career exploration
- Job shadowing

C. Tech Prep Introductory Courses

- Electronics
- Drafting
- Welding
- Need to speak to full time classes
- Qualified instructors

D. Training/Curriculum Design

- Quality instructors trained in equity knowledges(Staff in-service)
- Female instructors
- Tutorial services made available and advertised
- Detailed course description
- Flexible scheduling
- Cooperative experience for NTO students

E. Support Services Available

- Mentors/peer advisors
- Child Care
- Follow-up research
- Student support group

V. Placement

- Support services
- Mentorship
- NTO school-work transition/reinforcement
- Follow-up evaluations
- Work-site screening/climate assessment
- Facilities conducive to NTO
- Strategies for employer/NTO employee work relationships and understanding

The consensus of the Advisory Board is that a comprehensive assessment and career planning process would assist all students in retention and placement within a satisfying career. To increase retention for all students, it is important for instructors to intervene for those students needing remediation; to be sure that tutorial, support services are fully utilized.

The greatest need is to coordinate for an "all school" effort, bringing together counseling/tutorial services, financial aid, flexible scheduling, continuing education, remedial services and the public relations office. The greatest deterrents for women are child care services and financial need.

Appendix B

CVTAE
CENTER FOR VOCATIONAL, TECHNICAL AND ADULT EDUCATION
715-232-1382

March 13, 1991

UNIVERSITY OF WISCONSIN
STOUT
MENOMONIE WISCONSIN 54751

(Advisory Board Members)

Dear

At our last Advisory Board Meeting in December, we discussed the development of a brochure for the Northeast Wisconsin Technical College Electronic Program targeted for women. Enclosed is a mock-up, sample brochure. It will require pictures of women plus additional information for contacting someone at the college. Please make any suggestions, additions, deletions, or comments that you may have and return it in the enclosed, self-addressed envelope. The graphic on the front will be in a color (purple? or green?) and the rest will be in black and white. The thought is that it could be distributed through agencies, stuffed in AFDC checks, and/or placed in public places throughout the area. This would be a simple type of advertising designed to bring in a few more prospective students to provide additional role models. Please feel free to make any suggestions regarding the brochure or distribution method.

Also, enclosed is a copy of our Advisory Board Minutes. A project for implementation during the second year has been written and is currently in the process of revision and refining. It will be submitted by Northeast Wisconsin Technical College for funding. We do not have plans to reconvene the Advisory Board this spring but you will be notified of subsequent meetings and project plans.

Thank you for giving of your time and providing the excellent direction and guidance for the development of the rough draft of the Statewide Model for Women In Electronics.

I look forward to hearing from you.

Sincerely,

Lorayne Baldus, Project Director
Women In Electronics Project
CVTAE/UW-Stout
218 Applied Arts Bldg.
Menomonie, WI 54751
(715) 232-1395

jb

Enclosures

cc: Fran Johnson

CVTAE
CENTER FOR VOCATIONAL, TECHNICAL AND ADULT EDUCATION
715-232-1382

UNIVERSITY OF WISCONSIN
STOUT
MENOMONIE WISCONSIN 54751

April 18, 1991

Advisory Board Member

Dear

Enclosed is a "revamped" brochure. Thank you for your good suggestions and comments.

This particular brochure is intended solely to interest women in the electronics program. Check it over to make sure it does not promise something the college cannot deliver. I also need to know if the salary per month is realistic and if some qualifying words should be added, i.e., "Average beginning salary," "Average salary of persons employed after one year," or some other statement.

There is space for three pictures. We can add quoted statements and names, or we can have pictures. John Pogorelc will arrange for pictures of women from Green Bay and these should be light, simple pictures that would appeal to females. I have also added space to list names of companies where graduates have been employed and will need to be furnished with this information. Someone suggested the logo for NWTC be used and that too will need to be included in the brochure after I have received a copy of the logo.

John Pogorelc has submitted a proposal for a sex equity grant-funded project to implement some of the recommendations made at our Advisory Board Meetings. I am hopeful it will be funded but, regardless of the outcome of that proposal, this brochure is intended for the coming year. Hopefully, it will arouse some interest and we will see a few more women entering the electronics programs in the fall of 1991.

Thank you again for your time and assistance.

Sincerely yours,

Lorayne Baldus, Project Director
Women In Electronics Project
CVTAE/UW-Stout
218 Applied Arts Building
Menomonie, WI 54751
(715) 232-1395

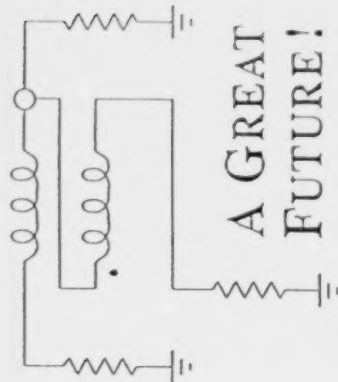
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Enclosure

cc: Fran Johnson

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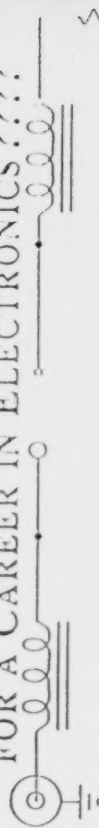
WOMEN AND ELECTRONICS



WOMEN IN ELECTRONICS
 Northeast Wisconsin Technical College
 3740 West Mason Street
 P.O. Box 19042
 Green Bay, Wisconsin 54307-9042

Place
 Stamp
 Here

HOW CAN NWTTC PREPARE ME FOR A CAREER IN ELECTRONICS???



ORIENTATION

During the initial orientation session, you will learn about the electronics program, be introduced to careers in the industry and explore job realities to determine if you wish to enter the training program. This two-year program requires an aptitude in math and science.

COUNSELING

As an applicant, you will have a personal interview; a skills assessment; and an evaluation of your interests, skills and experience. You will receive guidance in specific program and career goals.

BASIC SKILL BUILDING

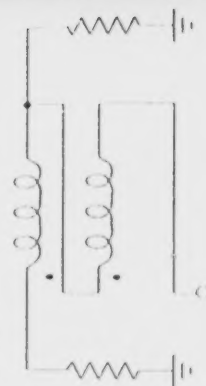
If your reading and math levels are below the levels needed for training, you can improve them in an individualized learning program in NWTTC's skill lab. Tutors (at no charge to you) will help you prepare to meet the entry-level qualifications for the Electronics programs.

TRAINING

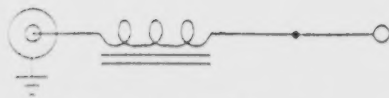
Electronics is a 69 credit, two-year associate degree program. Graduates choose from a variety of jobs: assist engineers to design and develop experimental and prototype electronic equipment and products; repair, service and program in-plant automatic control equipment, computers, robots and other electronic equipment; become a troubleshooter; work with sales personnel and demonstrate new equipment to customers. There are new job opportunities in electronics constantly being created. The average monthly salary is \$1692.

SUPPORT AND EMPLOYMENT ASSISTANCE

Individual counseling and assistance will be available to you, along with group support and job networking opportunities.



BEST COPY AVAILABLE



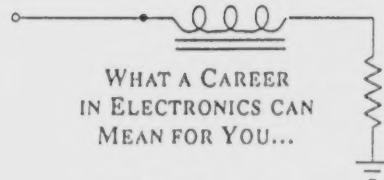
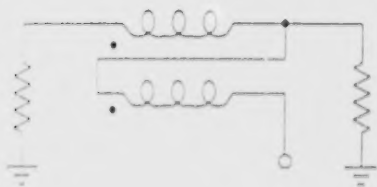
WHAT DOES THE FUTURE HOLD FOR YOU?

Department of Labor projections forecast that 80 percent of new labor market entrants will be women, minorities, and immigrants by the year 2000. Currently 70 percent of working women are clustered in 30 percent of the jobs. Many of these are paid positions, but women who complete technical occupation training can anticipate potential high salaries in the male-intensive technical occupations.

Northeast Wisconsin Technical College is meeting the challenge of preparing women for the future work force. The college provides training and hands-on experience that results in exciting and well paid careers.

A career in electronics may be right for you if you have an interest in math, science, and problem solving.

For more information:
**NORTHEAST WISCONSIN
TECHNICAL COLLEGE**
(414) 498-5498, Code # 1-1138.

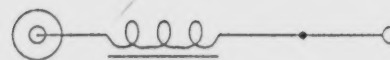


WHAT A CAREER IN ELECTRONICS CAN MEAN FOR YOU...

- Good salary
- Marketable skills
- Independence
- Job promotion
- Job satisfaction
- Personal challenge
- Life-long learning opportunities

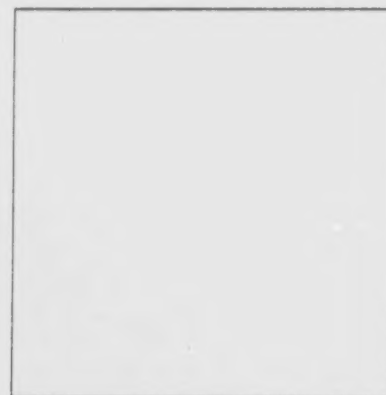


"I like math and when I read information about the electronics program at Northeast Wisconsin Technical College, I decided to try it. I like what I do. I use my best skills and my salary has been very good."



OUR GRADUATES HAVE FOUND GREAT JOBS! HERE ARE SOME EXAMPLES...

"With three children to support, it was important for me to find a career that would be both satisfying and provide higher salaries. Electronics is an area where I have the opportunity to advance."



IS ELECTRONICS FOR ME?

If you can answer "yes" to most of these statements, a career in a professional trade may be exactly what you've been looking for.

- ☐ I like to work with mechanical and electrical tools.
- ☐ I want to be my own economic provider.
- ☐ I can work independently and also as part of a team.
- ☐ I like to figure out ways to solve practical problems.
- ☐ I like to take on new challenges.
- ☐ I am able to get along with a lot of different kinds of people, both male and female.
- ☐ I like to have something tangible to show for my efforts.
- ☐ I get satisfaction from figuring out how things work.
- ☐ I would like to learn more about a career in electronics. Please send me more information.

Name _____
Address _____
City _____ State _____ Zip _____
Phone _____
Best time to call _____

**NORTHEAST WISCONSIN
TECHNICAL COLLEGE**
(414) 498-5498
CODE # 1-1138

Women and Electronics

Training For A Career In Electronics At NWTC

NWTC's three electronics programs are:

- Electronics
- Electromechanical Technology
- Instrumentation

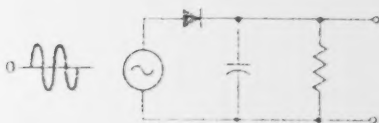
Graduates choose from a variety of jobs:

- maintain and repair electronic equipment
- service, repair, and overhaul equipment
- demonstrate new equipment to customers
- install and set up automated production equipment
- program automatic control equipment
- test, troubleshoot, and inspect electronic products

There are new job opportunities in the electronics industry being created constantly!

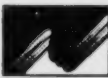
The average monthly salary for the 1990 NWTC graduates is:

- Electronics, \$1692
- Electromechanical Technology, \$1952
- Instrumentation, \$2224



A GREAT FUTURE!



 **Northeast**
Wisconsin Technical College
GREEN BAY • MARINETTE • STURGEON BAY

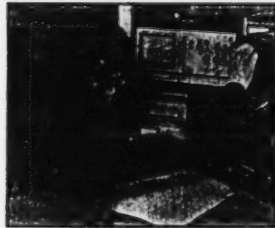
What does the future hold for you?

Department of Labor projections forecast that 80 percent of new labor market entrants will be women, minorities, and immigrants by the year 2000. Currently 70 percent of working women are clustered in 30 percent of the jobs.

Women who complete technical occupation training can anticipate potentially high salaries in the male-intensive technical occupations.

Northeast Wisconsin Technical College is meeting the challenge of preparing women for the future work force. The college provides training and hands-on experience that result in exciting careers with high salaries.

A career in the electronics industry may be right for you if you have an interest in math, science, and problem solving.



Testimonial:
Diane Vande Hei,
Electronics student

"When I got my divorce I decided to go back to school. I didn't want just a minimum wage job. I wanted to be self-sufficient. I took some of the interest tests in NWTC's Career Center and tested high in the technical areas. So I investigated Electronics and decided to go for it! I'm glad I made this decision. I like being back in school!"

"The job outlook is great and expected to remain strong. The entry level salaries are attractive too!"



Testimonial:
Kathy Gille,
Instrumentation '91

"I entered Instrumentation to get a better paying and stable job. In case anything happened to my husband, I could support my children and wouldn't have to rely on society."

"It's not as hard as everybody may think it is. I wasn't good in math in high school. I love it now."

"Women need to be more competitive in these fields. If you want to work for a good company and earn a high salary, these are the fields to go into. Most everything is electronically automated in industry."



Our graduates have found great jobs!
Here is a sample of some of the recent employers:

Advanced Systems, Inc., Green Bay
Bartelt Business Machines, Inc., Green Bay
Bay Tec, Inc., Oneida
Commonwealth Edison Co., Chicago, IL
Green Bay Metropolitan Sewerage, Green Bay
Paper Converting Co., Green Bay
Perini America, Inc., Green Bay
Presto Products, Appleton
Proctor & Gamble, Green Bay
Tec Systems, Inc., DePere
Wisconsin Public Service, Green Bay
Xerox Corporation, Appleton

Appendix C

Access, Equity and Opportunities

The following excerpts are taken from a report titled, "Access, Equity and Opportunity-Women In Machining: A Model Program," conducted through a grant from the Massachusetts Industrial Services Program. It was directed by Heather Warner, Springfield, MA and compiled in September, 1989. The recommendations made included:

1. Training providers should first assess the kinds of jobs male and female graduates have taken upon completion of training and how their careers have developed.
2. The second step is to determine if there are good jobs for women graduates.
3. Third, look at the training organization itself. Is it supportive of women? Are women getting the information and survival skills they need? Program design should be evaluated, including recruitment, assessment, counseling, curriculum, linkages with upgrading programs, availability of child care, the placement process and follow-up. Only after these three steps are taken should recruitment be stepped up.

Specific recommendations were also made for training providers, employers, labor unions, community organizations, policymakers and women in the trades.

Demographic Changes and the Need for Nontraditional Training Initiatives

The criteria for determining the need for programs cannot be based solely on a demand for labor and the availability of women to fill job openings. Persons interested in starting up programs that increase women's access to training must consider whether the available jobs offer good wages, growth potential, interesting work, and a receptive environment. Many skilled trade and technical fields require transferable skills that can lead to a variety of related careers, for example, in the computer or engineering fields. The acquired math and mechanical competencies increase job options and are useful in everyday life. General labor market trends and predictions provide necessary information about job opportunities, but they may be misleading guidelines if counselors and training providers fail to consider the quality of work or future these jobs hold.

Changing labor market demographics throughout the U.S. have affected the readiness of training providers and employers to participate in programs that prepare nontraditional or under-represented populations to work in the industry. A May 1989, article in the *Wall Street Journal* states, "*work - force shortages of the 1990's may accomplish what the activism of the 1960's couldn't: getting corporations deeply involved in broad social issues.*" In addition, changing labor market demographics will challenge the issues of occupational segregation that women, African Americans, Hispanics, immigrants, and others are faced with today. Data published by the Hudson Institute in their Workforce 2000 report states:

- Workforce growth will drop to 1% in the 1990's as compared to 2.9% in the 1970's.
- By the year 2000, nearly two-thirds of new entrants to the labor market will be women.
- An additional 20% of new entrants will be non-white and immigrant males.
- Only 15% of new entrants to the labor market will be U.S. born, white males.

These changes in the labor force necessitate innovative approaches to providing education, training, and eventual employment in high-technology, high-skill jobs to women and people of color. Employers and training providers who are looking to the future must understand the need for alternatives to the traditional systems of training and employment. Future work force participants are not being reached as potential candidates for the increasing number of skilled and

technical jobs. Some training providers and employers do outreach to populations excluded from these fields, but quite often neither is prepared to meet the institutional and work place challenges that such an initiative entails.

Barriers to Women Entering Male-Intensive Occupations

Women face barriers at all levels of the training cycle including enrollment, training, job search, and on the job. Some barriers, like biases in assessment and testing, are tied to a specific stage of the training cycle. Others appear throughout. The barriers discussed below are divided into two sections. First are those barriers that are specific to stages of the training cycle. Second are those barriers that are ongoing. Recognizing the barriers facing women is a first step to identifying solutions. For many women, just getting in the door can be a tremendous accomplishment. The barriers women face entering the skilled trades are deeply rooted in male/female sex-role socialization.

Short-term Barriers to Training and Possible Solutions

Sex bias in testing restricts women's enrollments into training programs. The ability to quickly and correctly answer questions is a measure of exposure to mechanics, and not necessarily of problem-solving or mechanical ability. Mechanical aptitude is often incorrectly viewed as an inherent quality. Mechanical problem-solving is learned. The tests measure an individual's experiences, not his/her ability to learn. This may unnecessarily eliminate prospective trainees, especially women.

There are several ways to approach sex bias in mechanical aptitude testing. At home and in school women need to get more exposure to the way machines and mechanical equipment work. But for women who have already missed out on many of these experiences, one strategy is to allow women to enter training with low mechanical test scores. The assumption is that mechanical and problem-solving skills will be learned through classroom exposure. Another strategy is to prepare women for mechanical testing by offering hands-on remediation.

Women Often Lack Information About the Range of Trade and Technical Careers Available.

Information about career options in trade and technical jobs should be provided to women. It is more likely that women will choose a nontraditional path if they are exposed to the idea, given information about the trade, and supported in their choice. Yet offering women only one or two alternatives to traditional career paths is extremely limiting. Training centers should expand nontraditional initiatives to include all of the trade and technical areas within the institution. More and better career exploration for women into nontraditional fields should take place at all levels.

Math or Technical Anxiety. Lack of Exposure to Math and Math-Related Skills.

Women may have difficulty with the mathematics sections of entrance tests because they are discouraged from pursuing higher-level math, mechanical drawing, and shop while in school. Math tutoring and remediation should be available to women before and during training. Schools should be committed to providing women with the math and technical skills necessary to compete in today's job market. Anxiety and lack of confidence in their mathematical ability intimidates some women from entering a nontraditional training program. Inviting role models who have experienced and overcome similar fears to speak at orientation and assessment meetings helps women to overcome math anxieties.

Ongoing Barriers and Possible Solutions.

The need for support services cannot be emphasized enough. Biweekly informal meetings or support groups prove invaluable for the identification of barriers and their resolution. Structured support programs result in improved retention in training. In addition, women get the tools they need to prepare for working and advancing in the industry. The following are barriers women face in training, job search, and on the job.

1. **Lack of affordable, quality child care, especially for early mornings, after school, and for sick children.** Women cannot enter the trade because they can't find adequate child care, yet until there are more women in the trades, child care centers and employers will not see the need for expanded or more flexible services and hours.
2. **Lack of information about the local industries and the varied career opportunities.** Because women do not usually know other women working in skilled trades, they lack a network to find out about available jobs. The network men use in the trades is often so subtle that women may not be aware it exists. Men find out about job leads, which positions and work places offer good opportunities, and where the industry is headed in the future. Women need this information as well. Encouraging trainees to communicate with each other after they are working in the field is important. This can be done by inviting them back to talk with new trainees, by helping to set up a support group for women working in the trade, and by creating an alumnae guide with addresses, pictures, and short biographies of graduates.
3. **Sexual harassment and discrimination.** Sexual harassment is unwanted sexual attention. In educational or work environment it deprives people of one sex of opportunities that are enjoyed by persons of the other sex. Sexual harassment can take the form of verbal remarks and jokes relating to gender and sexuality, gestures such as winking and leering, pressure for sexual activity, unwanted touching, patting, pinching, or a friendly arm around the shoulder, threats concerning one's job, grades, etc. accompanied by demands for sexual favors, and physical assault.

Training centers and employers may be hesitant to admit that sexual harassment is a problem. For women, putting up with the stress and strain of sexual harassment, in addition to the challenges of training or work, is emotionally draining. It lowers self-esteem and motivation. Women may drop out of training, quit a job or get fired because of it. They may experience physical illness as a result of the tension. Women are hesitant to talk about incidents of sexual harassment because their claims are often minimized or met with disbelief. Some people believe women are asking for sexual harassment by wearing certain clothing or acting a certain way, similar to the myth that women are asking to be raped.

Although many schools and training programs have general grievance policies, few have written policies for addressing sexual harassment. Developing mechanisms to resolve issues of sexual harassment in training gives women concrete experiences to draw upon when faced with similar situations at work. A well-outlined policy should include definitions of sexual harassment and detail means to prevent it. It should be widely distributed to all students and staff.

4. **Opposition or little support from family and friends.** Inviting friends and family to see the training center, role playing new strategies for communicating with the individual (s), asking a mutual friend to help mediate for you, or when all else fails, cutting off ties with the person.
5. **Lack of transportation to get to work.** This limits job options, since nearly 50 % of the women in training do not have cars. Few buses operate early enough and/or have routes to the

outlying communities where jobs are increasingly found. Getting to work is even more difficult when children have to be dropped off at a child care facility or school. This is complicated further by the fact that very few child care facilities and schools are open early enough in the morning to accommodate women who have to get to work at 6:30 or 7:00 a.m.

Employers are less likely to hire someone if they know that transportation is a problem. Solutions to transportation problems include working out car pool arrangements by creating a ride board at the training center, mapping out routes and posting bus schedules, asking the public transportation authority to add a bus route or extend the normal operating hours, and talking with employers about offering more flexible work hours. Just as with child care arrangement, several back-up systems need to be in place if women are using public transportation or car pooling to work.

6. **Financial hardship while in training.** Women who have recently lost a job usually have difficulty maintaining their pre-existing standard of living. They may have car and home mortgage payments to keep up with. In addition, there are time constraints for collecting unemployment insurance. This can limit career exploration. Part-time and evening work is a viable option for some trainees. However, it often complicates family obligations and creates 15 hour days of training and work. Welfare recipients may not be able to work part-time as receiving pay would jeopardize their benefits.

Additional Barriers to Women of Color and Linguistic Minorities

Language and cultural biases affect test scores and limit training options. English as a Second Language classes often do not prepare individuals for the technical reading or writing skills they will need in training or on the job. There are few African American, Hispanic, or Asian women working in skilled positions. This means that women of color have even fewer role models than white women. In addition, some cultures are even less supportive of women working in nontraditional fields than the dominant U.S. culture. Women from these cultures may face stronger opposition from friends and family.

Historically, public education in the U.S. has been officially committed to imparting quality education for all citizens equally. In reality, institutional racism has resulted in creating poor schools with less resources than those located in white neighborhoods, high student-teacher ratios, and lower expectations. This has caused consistently lower academic achievement by linguistic minorities and people of color. It has resulted in limited access to both high education and better paying jobs that require advanced skills.

"COLLABORATION IS THE KEY!"

For the past eighteen months Project CREATE has been at the forefront of an effort involving several Hampden County, Mass. area employers, secondary and post-secondary schools, public sector training providers, federal and state agencies, and community organizations to develop training programs that meet the needs of both trainees and industry.

This training grew out of Summer, 1989 labor market research and focused on 3 trades: high-tech automotive repair, graphic arts/printing; and Computer Numerical Control machine maintenance & repair.

One hundred and seventy-one trainees benefitted from eight skills and upgrading programs taught at Dean Technical High School in Holyoke, Putnam Vocational-Technical High School in Springfield, and Springfield Technical Community College. Our recruitment goal was to attract women, people of color, linguistic minorities, and the underskilled to these programs.

In realizing the grant's goals, lessons were learned about recruitment, access/equity issues, retention, needs of trainees & local industries, internal and ongoing support, testing, mid-point and final evaluation, community and private sector participation, and the necessity to engage all available resources in providing training.

MAJOR LESSONS LEARNED:

RECRUITMENT: CREATE staff, realizing the need to clearly define it's recruitment and retention procedures, developed a twelve step guideline that included: detailing course description, screening tools, recruitment reflecting a proportionate demographic representation, testing, interviews, needs assessment, support services (i.e., tests translated into Spanish, etc.), and trainee selection process.

To help ensure recruitment goals, CREATE found it essential to directly approach community-based organizations. Direct mailing and telephone contact was conducted, as well as personal approaches to would-be students at home or place of work. Relevant state and federal training and apprenticeship agencies were also contacted.

INTERNAL SUPPORT: The development of support systems designed to ensure retention was a key to success for a number of linguistic minorities. A meeting conducted in Spanish prior to one automotive program start-up provided better understanding of goals, resources and course format, and instilled a determination to finish that never wavered. This course had a zero drop-out rate. By comparison, an earlier offering, without the meeting, saw 5 out of 7 linguistic minority students leave the course.

Attendance was regularly kept. Any student missing 2 days of class in a row was contacted to determine if steps could be taken to assist him/her. With this kind of personal follow-up, students knew they were being supported and had use of resources they wouldn't normally have access to.

TESTING: Pre-testing was conducted for all applicants to identify those who were over or underqualified, rather than being a pass/fail assessment. Those over and underqualified were not accepted in the belief they would either be bored or become overwhelmed, thus losing interest and dropping out, preventing others from having an opportunity to enroll.

Weekly tests were designed and administered by the instructors to stimulate the growth of knowledge. They were 'open book' during class, and meant to prod the students into fully utilizing their text books. Controlled exit tests were given during the last class using the same pre-tests and were used to establish any improvement in knowledge.

EVALUATIONS: Interim evaluations were taken during the third week of training and promptly analyzed. All pertinent, recommended changes, within fiscal limitations, were instituted. Final evaluations were distributed the last night of class, with results used to improve future training.

COMMUNITY and PRIVATE SECTOR PARTICIPATION: Involvement of the private sector in the development of state-of-the-art training curricula is essential to the growth and development of each specific industry.

Automotive course curricula were a collaboration between local repair shops and dealerships, General Motors Corp. (GM), Sun Electric Corp., Mass. Division of Apprentice Training, and Project CREATE. Manuals and text books were donated by GM with high-tech training equipment loaned by the Sun Electric Corp. Late model automobiles were loaned by local dealers and training was conducted at the William J. Dean Technical H.S.

Curriculum for the CNC Maintenance & Repair course was developed by the heads of the electronics, electrical and mechanical departments of Springfield Technical Community College (STCC) and reviewed by the Machine Action Project, shop owners and machine tool builders. This collaboration insured the course would meet the industry's needs, and produced an up-to-date repair curriculum.

Due to excellent private and public sector cooperation, CREATE doubled the number of programs offered and students trained, issued 142 certificates of completion and provided employment/advancement opportunities for many.

For a detailed report on CREATE training programs write the Machine Action Project, 1176 Main Street, Springfield, MA 01103.

Terry Widener

The Orientation To Nontraditional Occupations For Women Program: Serving the Needs of Ohio's Socioeconomically Disadvantaged Women.

The ONOW Program (Orientation to Nontraditional Occupations for Women) serves women in greatest financial need, particularly displaced, underemployed, unemployed and female offenders shortly before their release dates. The eight week program is designed to orient women to their career options in nontraditional areas and place ONOW participants in nontraditional occupations or training programs. The ONOW programs are housed in full service joint vocational schools and in female correctional facilities. The project serves as a link between women residing in the adult vocational centers' service areas and correctional facilities and the employment sector. Optimally, the ONOW program serves as a valuable recruiting source for those employers with federal and state compliance obligations. In 1989, 75 percent of Ohio's ONOW graduates were placed in apprenticeships, production occupations, nontraditional service areas, technical areas, nontraditional adult education programs or military service careers.

Components of the ONOW Program:

1. Career orientation in four nontraditional occupational areas; building trades apprenticeships, production occupations, nontraditional service careers, and technical careers.
2. Skill building components designed to target areas where women have traditionally scored lower than men. These areas include math, spatial and mechanical reasoning, and tool usage.
3. Physical fitness training designed to increase upper body strength, cardiovascular stamina, and overall endurance.
4. Hands-on opportunities to sample a wide variety of nontraditional areas, i.e., carpentry, welding, drafting, law enforcement, computer repair, etc.
5. Role modeling and "shadowing" opportunities with successful women who are established in their nontraditional careers.
6. Promotion of a good "work ethic" and orientation to employers' expectations and responsibilities.

Goals Expected: Participants completing this training shall be tested for measurable improvements in the following areas:

1. Basic math, algebra, plane geometry.
2. Ability to apply mathematical principles and formulas to practical shop problems (shop math).
3. Spatial and mechanical reasoning.
4. Basic blueprint reading.
5. Reading comprehension and communication skills.
6. Safety practices.
7. Hand/tool dexterity.
8. Physical fitness.

Skills To Be Learned:

1. Rule reading.
2. Nomenclature for all common hand and power tools.
3. Correct tool usage.
4. Assertiveness skills.
5. Job search skills for nontraditional occupations.
6. Resume writing for nontraditional occupations.

Concepts To Be Grasped:

1. Union and non-union trade structure.
2. Worker rights and responsibilities.
3. Women's history in nontraditional jobs.
4. Long and short-term goal setting.
5. Realities of the workplace.

The ONOW program is sponsored by the Ohio Department of Education, Divisions of Vocational and Career Education and is funded by sex-equity grants provided by the Carl D. Perkins Vocational Education act. There are no tuition fees for eligible participants.

During the 1989-90 fiscal year the ONOW program will operate at nine sites. Seven are located in full service joint vocational schools and two are in Ohio's female correctional facilities.

If you desire additional information regarding the ONOW program, the individual sites or current placement statistics, please contact:

Sheila Thompson, ONOW State Supervisor
Ohio Department of Education
Division of Vocational and Career Education
65 South Front Street/Room 907
Columbus, Ohio 43266-0308
(614) 466-2030

Barriers To Women Entering Nontraditional Occupations As Perceived By An Electronics Postsecondary School Recruiter

I wish I could provide you with a list of solutions to the problem of attracting and retaining women in nontraditional programs. However, I haven't found the answers! So I'll share my perceptions of the barriers I come up against when talking to women.

1. Low level of awareness concerning nontraditional careers. Women still are not being exposed to "hands-on" careers. I see few women in high school technical or math classes. I do see a relatively high percentage of female students in general drafting classes, but upon reading their background cards an overwhelming majority indicate architecture as the career path they want to follow. When I go to a specialized drafting class i.e., mechanical drafting, I see mostly males.
2. Lack of positive role models, of either sex, but especially female role models, in hands-on careers.
3. Negative image that many technical and hands-on jobs have. Many women who contact me for information about electronics fully expect the work to be dirty, done in an industrial environment, and possibly under unsafe conditions. These things are certainly a possibility, but are by no means the rule. Also, I've noticed an attitude that technicians are people who couldn't cut it in a "professional" job.
4. Lack of support from friends, family members, and classmates. Not being taken seriously.
5. Lack of mentors and advisors, particularly at the high school level, who are sensitive to women's issues and open-minded about nontraditional careers. For example, I once had a guidance counselor tell me that none of the "sweet young things" at that school would be interested in a dirty, boring electronics job!
6. Once a woman is enrolled in a nontraditional training program, the sexism they encounter is tremendous. Sometimes there are blatant attempts to be offensive and insulting, but often it is very subtle. In either case, a woman needs a good sense of self-worth to stand up to a classroom full of men who feel that her anatomy is a good topic of conversation. Also, instructors often expect that you've torn apart stereos, various mechanical devices on automobiles, etc. And a certain amount of familiarity with tools and shop equipment is assumed. This leads to a lot of frustration which over time, can tempt a woman to give up rather than continue to ask for "extra" help.
7. Lack of financial resources to educate and inform women through public relations and activities.

GOALS: KEY TO SUCCESS

GOAL 1-OUTREACH

<u>Objective</u>	X number of women are reached with introductory information about nontraditional occupations as a promising career option.
<u>Optional Activities</u>	Newspaper articles, school bulletin, radio and TV interviews, presentations to women's groups, want ads in newspaper, public service announcements, etc.
<u>Outcome</u>	Women are attracted to the school for in-depth occupational information.

GOAL 2-CAREER EXPLORATION

<u>Objective</u>	X number of women receive the information about NTO they need to make informed career decisions.
<u>Optional Activities</u>	Career exploration course, workshop, readings and films, industry tour, hands-on tryouts, etc.
<u>Outcome</u>	Women who decide NTO is appropriate for them begin the enrollment process.

GOAL 3-ENROLLMENT

<u>Objective</u>	X number of women enroll in NTO occupational training programs.
<u>Optional Activities</u>	Testing, math refresher course, individual counseling, walking women through registration procedure, etc.
<u>Outcome</u>	Women obtain appropriate NTO training.

GOAL 4-RETENTION IN TRAINING

<u>Objective</u>	X number of women complete NTO occupational training.
<u>Optional Activities</u>	Support group, staff training, consultations with instructors, assertiveness training, extra math help, linkages with community services, physical fitness training, arranging part-time jobs, etc.
<u>Outcome</u>	Women are placed in training-related jobs.

GOAL 5-PLACEMENT

<u>Objective</u>	X number of women are placed in appropriate NTO jobs.
<u>Optional Activities</u>	Mock interviews, support groups, contacts with employers, consultation with instructors and placement personnel, etc.
<u>Outcome</u>	Women are working in satisfactory NTO jobs.

GOAL 6-FOLLOW-UP

<u>Objective</u>	X number of women are working in NTO jobs Y months after leaving school. Information is obtained that will aid in improving the program's services.
<u>Optional Activities</u>	Support group, individual contacts with women, contacts with employers, work with placement officers, etc.
<u>Outcome</u>	Women's continued success on the job; improved NTO program.

Source: "The Nuts and Bolts of NTO," Second Edition, 1986, by Jo Shuchat Sanders, pp. 26-27.

Recruitment		Retention		Job Success	
Outreach	Career Exploration	Enrollment	Training	Placement	Follow-Up
Brochures Posters Newsletters Presentations Newspapers Radio and TV Mailings Press Releases Advertisements Role Models	Courses Workshops Presentations Hands-On Tryouts Audiovisuals Printed Materials Industry Tours Open House Events Role Models	Assistance With: •Financial Aid •Child Care •Transportation •Forms •Procedures	Assistance With: •Financial Aid •Child Care •Transportation Math Help Resolving The "Introductory Course Problem" Dealing With Other Instruction - Related Problems Physical Fitness Training Assertiveness Training Counseling Dealing With: •Family Opposition •Tokenism •Sexual Harassment •Racism Support Groups Role Models	Assistance With: •Child Care •Transportation Contacts With Employers Networking Interview Preparation Instruction In Legal Rights Support Groups Role Models	Contacts With NTO Women Contacts With Employers Support Groups

Source: Nuts and Bolts of NTO, Second Edition, 1986, by Jo Schuchat Sanders

OUTREACH TECHNIQUES

I. Basic Techniques

Brochures

Make the cover attention-attracting: simple graphics, eye-catching colors, a good slogan.

On the inside, briefly describe NTO and why it is desirable, list services along with contact information.

Posters

Coordinate with brochures. Include contact information.

School Publications

Programs should be mentioned in all outreach materials produced by the school: catalogs and bulletins, course listings, handbooks, newsletters.

Mailings

Obtain mailing lists from the women's center, the developmental studies program, the counseling office, the continuing education department, admissions, the registrar's office, and the public relations office.

Newspapers

- * News, such as a career exploration event at which "important" people are speaking, or the kickoff of your program.
- * Human interest stories, such as interviews with NTO students or workers.

Include contact information in each article, and have photographs taken.

Advertisements

Use a regular ad in the Help Wanted section of the newspaper.

Press Releases

Short written announcements of newsworthy events.

- * Enrollment of women in nontraditional career training doubles. . .
- * Local voc. ed. program praised by State Department of Education. . .

Public Service Announcements

Newspaper or calendar of upcoming community events.

Television and Radio

Talk Shows. Radio and Television.

Take an articulate role model with you to share the interview. Record a public service announcement to be aired frequently at different times of the day. For television, use action shots of NTO women in school.

Speak to Groups

Present to Women

Present to Community Organizations

High Schools

Outreach to high schools is a "delayed reaction" technique. Few girls are in NTO occupational programs at the high school level and few appear in NTO training or jobs right after graduation. Commonly, they say, young women spend several years in traditionally female jobs, have a couple of children, and then come to the program saying, "you came to my high school a few years ago. . ."

Reach Female Students

- * Presentation in assembly, have role models, show a film or have discussions with individual classes.
- * Career days, with handouts, role models and/or films.
- * Shops and labs for hands-on tryouts for an afternoon.
- * Short-term after-school, vacation week, or summer program for junior or senior high school students to explore NTO work.
- * Focus on the high school level, but include elementary school children.
- * Reach parents via PTA meetings or invitations to open house events. Parental approval is still a strong influence on adolescent girls, who are not likely to enter NTO training if their parents oppose the decision.

Present to Other Groups

Other Techniques

- * Staff an information booth -- at a community fair, at a job or career fair, at any event where large numbers of people are gathered.
- * Put up posters at public places and stores around town.

- * Ask currently enrolled NTO women to distribute brochures.
- * Ask supermarket managers to put brochures in grocery bags at the checkout counter.
- * Arrange with the welfare department to put brochures in the check envelopes. (Be sure you have strong financial aid packages to offer before you do this.)
- * Put announcements of your program in the newsletters or newspapers of high schools, local companies, military bases, churches and synagogues, and community organizations.
- * Put brochures in libraries.
- * Make your own slide show.
- * Women without required training sometimes apply to employers for NTO jobs. Ask personnel directors to refer them to you.
- * Buy ad space in programs for music, sports, and theater events.
- * Put public service ads in buses and subways.
- * Set up a booth (or a mobile van) equipped with simple hands-on tryout stations.

II. Upgrading In Industry

Do Your Groundwork

- * Identify growth occupations in local industry.
- * Find out which companies hire people for these jobs: your local industrial board, Chamber of Commerce, manufacturers' associations. These sources tell you the number of employees, the jobs, the executives' names and titles, and what the company manufacturers.
- * Ask instructors to tell you which companies have a forward-looking reputation.
- * Find out which companies are having problems with labor-short occupations.
- * Target large companies with good benefit packages.

Secure Administrative Support

This is absolutely essential.

"You must have strong administrative support from your school for this," "because you have to offer the company whatever it needs (within reasonable pre-arranged limits) and your school has to make good on what you offer."

- * Registration Procedures. Is it possible to offer classes outside the regular school semester and to conduct registration at the company? You can then move on it immediately.
- * Location. Can classes be held on campus, at the company, or both? If on campus, can extra sections of a class be formed quickly?
- * Course Content and Schedule. Must the courses you offer be regular courses or can they be individually tailored to the company's needs? Can they be offered during working hours?
- * Equipment and Facilities. What can be available? Who pays for what?
- * Contract Details. Who signs it? What should it include?

Source: "Nuts and Bolts of NTO," Second Edition, 1986, by Jo Shuchat Sanders, pp. 51-56.

Appendix D

CVTAE
CENTER FOR VOCATIONAL TECHNICAL AND ADULT EDUCATION
715-232-1382

UNIVERSITY OF WISCONSIN
STOUT
MENOMONIE WISCONSIN 54751

TO: Equity Network Participants

FROM: Lorayne Baldus, Project Director
Women In Electronics Project
CVTAE/UW-Stout
218 Applied Arts Bldg.
Menomonie, WI 54751
(715) 232-1395

DATE: September 18, 1990

SUBJ: Women In Electronics Project

I am again working on an equity project in collaboration with Northeast Wisconsin Technical College, "Design for Diversity: Women in Electronics." The purpose of this project is to develop a model to recruit, retain and place women in electronics occupations. As you so well know, our efforts to recruit women into nontraditional occupations have not always been successful, yet each of the VTAE colleges do have females who have finished coursework and are employed in the workforce. We have an understanding of why women do not choose to enter male-intensive occupations, but we do not have strategies that have been effective in increasing NTO enrollments. My task is to identify factors that influence women to enter nontraditional occupations and develop a statewide model utilizing these factors to increase enrollments in electronics courses. This model will then be adapted for use in other trade and industry areas and shared with all VTAE colleges.

There have been several projects in other states and all point to an effort to actively recruit through a variety of methods. A project in Thief River Falls, MN, has administrative support for a full-time position where the project director has been extremely successful in attracting women into trade and industry courses. She attributes the success to a "one-on-one" recruiting, mentoring and support services both in school and in the workplace. A very successful federal project in Portland, Oregon recruits mature women and provides a highly structured orientation program with support services from training through placement. Another factor, of course, is the support of business and industry in hiring the NTO worker. If you have strategies that you have used in working with employers, or in any of the areas mentioned, I would appreciate your sharing them with me.

I would appreciate any help that you could give me. Specifically, I would like copies of brochures from your college on the electronics programs and other male-intensive programs, a description of the type of support services offered to nontraditional students, career counseling in NTO, and any insights you may have regarding the barriers and encouragers for nontraditional occupations in your area. Enclosed is a pre-addressed label for your use and a response form that you may use if it fits your situation. **Please return this form by September 28, 1990.**

You have received a notice of the Statewide Sex Equity Conference. We have asked Shirley McCune to be a presenter for an evening meeting for VTAE participants following the pre-conference and she is checking flight schedules to see if this is possible. I hope to see you there!

Thank you for taking time to respond to my request for aid and assistance! Any insights that you can give me will be greatly appreciated.

cc: Frances Johnson

UNIVERSITY OF WISCONSIN STOUT IS AN EQUAL OPPORTUNITY AND AFFIRMATIVE ACTION UNIVERSITY.

**VTAE Program To Enroll and Retain
Women In Nontraditional Occupations**

Name: _____
Title: _____
VTAE College: _____

1. Strategies used to recruit:

2. Obstacles to entering and strategies used to overcome obstacles:

3. Use of role models and mentors for students:

4. Support services provided (orientation, tutoring, grouping in classes, etc.)

5. Administrative support :

6. Business and industry, community, government involvement:

7. Program is successful/unsuccessful because:

Please return this form by September 28, 1990

**VTAE Program To Enroll and Retain
Women In Nontraditional Occupations**

RESPONSES

1. Strategies used to recruit:

- -Newspaper advertisements of NTO workshops, Pre-Tech, Pre-Electronic workshops.
- Flyers distributed to community agencies, public schools, etc.
- Shadowing set up for Pre-Tech, Pre Electronic workshops and also additional shadowing for NTO participants.
- Career awareness for school groups (hands-on).
- We are recruiting through our single parent and displaced homemakers projects, Toward Technology and Turnaround. Counselors in the institution representing Admissions, Career Planning Center and the divisions are all sensitive to the needs of women and actively recruit when appropriate.
- -Division counselor speaks to high school groups regarding nontraditional careers.
- All career counselors and project coordinators suggest nontraditional careers to students.
- Nontraditional grant workshops are held to explain the career and economic benefits of a nontraditional occupation. Participants come from community agencies and college staff.
- We recently utilized the ACT data files to contact female and minority students about this program. Also, we work closely with a number of CBO's informing them of our Division's initiative of attracting additional women into our programs.
- -Referrals from Student Services, Goal Oriented Adult Learning (GOAL), etc.
- Role model brochure.
- College NTO program brochures.
- Career-testing in Career Decision-Making class.
- Women's Resource Bureau "Feeder", short courses-math, computers.
- Information sessions in individual technologies areas; law enforcement, mechanical drafting, etc.
- "Try Nontraditional," videotape.
- Employment tours to NTO area employers.
- Career fairs on campus-with NTO role models.
- Visits by NTO recruiters to high school classes, employment fairs, etc.
- Media exposure-notices of WRB classes, NTO feature articles.
- At this time, we do not actually have a planned strategy. We do a personal interview with each student who attends part or full time. During the interview we talk about NTO to students to explain that our programs encourage NTO students. This year we have more female students in welding than male. Virtually all our industrial programs have had women and there have been men in nursing, barber and cosmetology.
- District-wide publications, word of mouth, single parent, homemaker and displaced homemaker groups.

2. Obstacles to entering and strategies used to overcome obstacles:

- -Poor math, pre-technical skills
- Fear of failure

- Lack of awareness of these programs
 - Poor self-concept
 - We offer Pre-Tech, Pre-Electronic workshops to reduce anxiety and increase skill level.
 - Pre-Tech math classes
 - Exploration
 - Individual and group support
 - NTO Workshops (math, career counseling, hands-on).
- -Lack of exposure to technical coursework, i.e., basic introduction to electronics, mechanics, construction. We recommend women enroll in Continuing Education noncredit courses in drafting, electronics, machine tool, etc. We also use shadowing experiences.
 - Lack of algebra or math skills. We refer to Study Skills Center for math, algebra readiness. Math anxiety workshops are offered through single parent and displaced homemakers projects.
 - Lack of ability or interest in relocating for a job. We work with women on overcoming their fears and taking risks but continue to have difficulty convincing women to consider relocation.
- -Weak science/math
 - GOAL classes in both areas are pre-requisites to regular courses.
 - Nontraditional career planning class for women -12 hours.
- Lack of information regarding what nontraditional careers are. The actual names of the programs seem to be a hindrance.
- Many females are not coming in with the appropriate pre-requisites of the program. They are then counseled into remedial and/or other courses to bring them up to the appropriate level.
- -Lack of referrals-strategy: one-to-one telephone contacts.
 - Child care-strategy: financial aid for child care available for NTO.
 - Transportation-strategy: financial aid for transportation available.
 - Individual Support-strategy: one-on-one personal counseling.
 - Lack of Role Models-strategy: role model brochure and career fair with role models.
 - Classroom Discrimination-strategy: individual visits with instructors and NTO students. NTO student support groups.
 - Lack of Family Support-strategy: counseling and NTO support groups.
 - Lack of Self-Esteem and Personal Skills-strategy: Classes in career decision-making and entering job market at mid-life.
 - Poor Basic Skills-strategy: Instructional Learning Center and WRB "short" courses (math, computers.)
- One obstacle I feel plays a part in NTO is the lack of support that high school counselors seem to give students. Many times students will say they were discouraged by a high school counselor and after the student has worked for awhile, they may come to school in a NTO area.
- -Math deficiency-math tutoring
 - Attitudinal barriers concerning women doing "men's" work
 - Raising awareness of sex role stereotyping issues
 - Childhood messages

3. Use of role models and mentors for students:

- We hire students to work for NTO for demonstrations in specific hands-on exploration. We use students as presenters in both off and on-campus nontraditional presentations. We hire students to work as tutors with other nontraditional students. We utilize NTO students as mentors in the classroom for individual shadowing.
- We use shadowing, connect existing women in nontraditional programs with prospective women students. We try to connect women students with community women in nontraditional jobs when possible.
- Occurs naturally within program.
- Women who are in nontraditional programs are brought into the workshops to speak about their experiences.
- None explicit, we try to bring employers and graduates to speak from time to time.
- -Role model brochure.
-Plan for series of role model articles in campus/local newspapers.
-Career fairs with role model speakers/panels.
-One-on-one job shadowing-role model/mentor with students.
- We do have students talk with other students who have been in NTO. No specific mentor program though.
- They are used widely in the Women Assessing Technology Project, both in panel formats and one on one consulting through phone conversations.

4. Support services provided (orientation, tutoring, grouping in classes, etc.)

- -Orientation through NTO (counselor discusses our NTO programs, tours facilities, etc. Several NTO programs are explored with each NTO).
- -Tutoring provided through our JTPA project, and for the Sex Equity Project. Participants are referred for tutorial services to our learning lab.
- -Support groups and individual counseling are provided in both our Sex Equity and WED Projects.
- Our college has divisional counselors and counselors employed in single parent and displaced homemakers projects. Our Study Skills Center provides additional skills assistance and tutors if necessary. We are currently reviving the Women-For-Women Support Group.
- -Provided by instructors and division counselors.
-Tutoring available as needed.
-Strongly advise students to take one credit "College Survival Skills," class in first block.
- Shadowing is available in some of the programs. Tours of laboratories and aviation centers are given.
- Open labs and tutors are provided by the college. The Division has a minority counselor who work with females and minorities.

- -Financial aid-child care
- -Financial aid-transportation
- -Scholarships/financial aid for tuition
- -Counseling (one-on-one)
- -NTO support group
- -Peer tutoring organization
- -Instructional Learning Center-basic skills
- Our women's programs (PIVOT, Displaced Homemakers, Career Options for Farm Women,) have support group meetings once a week. Some of those women are in NTO and that proves to be a good network for them.
- -Tutoring: grant money for child care and transportation costs.
- -Individual counseling dealing with personal or school issues.
- -Serving as liaison between student and college.

5. Administrative support :

- None
- Strong administrative support is necessary to keep our program strong. We have strong support from our Assistant Director for Student Services and our Supervisor for Trade and Industry.
- None
- None
- The administration in the Technical and Industrial Division supports and encourages the enrollment of females into the program.
- -NTO/Sex Equity Advisory Board.
- -Faculty in-service on sex equity planned for January, 1991.
- -NTO Recruiter-in Women's Resource Bureau.
- -Sex Equity Coordinator-in Women's Resource Bureau.
- -Monitoring of enrollment patterns by Women's Resource Bureau.
- -Coordination of recruitment/retention efforts with:
 - Student Services
 - Native American Bureau
 - Instructional Learning Center
 - College credit course-"Changing Roles of Men and Women"
 - Financial aid sources.
 - "Short" courses offered by Women's Resource Bureau.
- There is verbal support, but not a priority. Although, I have had positive comments from our industrial occupations dean. I think he is beginning to realize the importance of NTO.
- None

6. Business and industry, community, government involvement:

- -Currently talking with G.M., EAP about providing support services for females in skilled trades (Apprentices).
- Our JTPA project has a component which places NTO grads in employment. We will provide follow-up services.
- We work closely with community agencies who contract with J.O.B.S. program.
- We work with DPI schools to provide NTO career awareness experiences.
- Federal and state government provide essential funding.
- None
- Community agencies supply participants to the workshops.
- Informal business involvement via jobs for part time, tours, some donations, visitations, and service on advisory committee.
- -Employment tours-to NTO businesses.
- Job placement-through Student Services.
- Referrals made directly to employers.
- Coordination with other job placement programs (e.g., Forward Service Corp.)
- Direct contacts to employers (@ job tours/job openings by individual technologies instructors.
- Not specifically geared to NTO.
- Employers serve as consultants for labor market, information and advise women of career opportunities, salaries, job openings.

7. Program is successful/unsuccessful because:

- -We are unsuccessful in that there are still programs which have low female participation.
- We are successful in that this is improving.
- Success due to:
 - Womens' attitudes and willingness to risk, grow, change.
 - Financial support of federal and state government.
 - Administrative support and commitment.
 - Sensitivity and understanding of teachers and counselors.

Lack of success due to:

- Womens' lack of confidence and unwillingness to consider options which are nontraditional.
- Womens' unwillingness to consider the need to relocate for jobs.
- Our districts lack of jobs and lack of growth in the trade and industrial area.

Institutional barriers remain:

- Few options for women to gain "hands-on" experience (number and variety of Continuing Education classes are limited.)
- No opportunities to "ease into" program via outreach centers.

- No designated staff members who assume responsibility for recruitment, retention, and placement of females in nontraditional occupations.
- Dependent upon amount of up front work students do, i.e., GOAL Academics, Science, Math.
- Staff turnover has been the greatest problem.
- The program is still seriously lacking in adequately enrolling a large number of women.
- The program is successful because:
 - One-on-one counseling is available (@ individual barriers/problems).
 - Financial aid is available for child care/transportation.
 - Cooperation with other college departments and services leads to coordination of effort.
 - Good relationships are maintained between Women's Resource Bureau and Science and Technologies Instructors.
 - "Short" feeder courses offered by Women's Resource Bureau initiate NTO contacts for students.
 - Career decision-making classes provide skills assessment and career direction.
 - Assertiveness training classes provide self-esteem and communication skills.
- Teachers need more awareness about student in NTO. I feel the Deans help support the idea, but we need to deal more with instructors and employers where these students will enter the job market.
- This program is successful because it has continuity (6 years) and a staff that is enthusiastic about the subject and committed to its success.

Appendix E

«DATA Advisory Committee Mailing List»

CVTAE

CENTER FOR VOCATIONAL TECHNICAL AND ADULT EDUCATION

715-232-1382

September 10, 1990

«line 1»

«line 2»

«line 3»

«line 4»

«line 5»

UNIVERSITY OF WISCONSIN
STOUT
MENOMONIE WISCONSIN 54751

Dear «salutation»

The Center for Vocational, Technical and Adult Education at the University of Wisconsin-Stout has been awarded a grant by the Wisconsin Board of Vocational, Technical and Adult Education to conduct a project, "Design for Diversity: Women In Electronics." The principle focus of this project is to develop a systemized approach for increasing female electronics enrollments on a statewide basis. A comprehensive model will be developed to address three major components; enrollment, retention and placement of female students in electronics careers.

One of the objectives of this project is to organize an advisory committee. The purpose of the advisory committee will be to:

1. Provide input into the model development process.
2. Review and critique the developed, draft model and materials.

John Pogorelc, Northeast Wisconsin Technical College, gave me your name as a possible committee member. I would be very pleased if you could serve in this capacity.

The first advisory committee meeting will be held at Northeast Wisconsin Technical College on Thursday, October 11, 1990, from 10:00 am to 1:00 pm. Lunch will be provided. A second advisory meeting will be held in the Spring of 1991 to review and critique the draft model.

I have enclosed a copy of the project outline for your information. You will note some portions have been deleted. Also enclosed is an advisory committee acceptance form and a self-addressed stamped envelope. Please return this to me by **September 20**. Additional materials and an agenda will be sent to you upon receipt of your letter. If you have any questions, I can be contacted at (715) 232-1395.

Thank you very much for your consideration . I look forward to working with you.

Sincerely,

Lorayne Baldus, Project Director
CVTAE, UW-Stout
218 Applied Arts Building
Menomonie, Wisconsin 54751

jb

Enclosures

cc: John Pogorelc

DESIGN FOR DIVERSITY: WOMEN IN ELECTRONICS

ADVISORY COMMITTEE ACCEPTANCE FORM

_____ YES, I WOULD LIKE TO BE A MEMBER OF THE ADVISORY
COMMITTEE FOR WOMEN IN ELECTRONICS

_____ I WILL ATTEND THE MEETING, ON OCTOBER 11, 1990

_____ I WILL NOT BE ABLE TO ATTEND THE MEETING ON
OCTOBER 11, 1990

_____ I WILL ATTEND THE LUNCHEON.

_____ I WILL NOT BE ABLE TO ATTEND THE LUNCHEON.

Name: _____

Address: _____

Phone: _____

**Please return this form by September 20, 1990 in the
enclosed self-addressed, postage paid envelope.**

**Design For Equity: Women In Electronics
Advisory Board Meeting**

**Northeast Wisconsin Technical College
Green Bay, WI
October 11, 1990**

AGENDA

- | | |
|---------------|--|
| 9:30 - 10:00 | Registration |
| | -Coffee and Discussion |
| 10:00 - 10:30 | Women In Nontraditional Occupations |
| | - Barriers |
| | - Encouragers |
| | - Project Components |
| 10:30 - 10:45 | Review of Research Projects and Outcomes |
| | - B-FIT Videotape |
| 10:45 - 12:00 | Discussion |
| | - Project Objectives |
| | - Outreach Strategies |
| | - Model Components |
| 12:00 - 1:15 | Lunch and Continued Discussion |

Women In Electronics Advisory Board Members

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Appendix F

CVTAE
CENTER FOR VOCATIONAL, TECHNICAL AND ADULT EDUCATION
715-232-1382

UNIVERSITY OF WISCONSIN
STOUT
MENOMONIE WISCONSIN 54751

October 31, 1990

Advisory Board Members Name

Dear

Thank you for coming to the Advisory Board Meeting on October 11. The next Advisory Board will meet for an 8:00 a.m. breakfast session, on December 13, 1990 at Northeast Wisconsin Technical College. Enclosed is a reservation form and a self-addressed stamped envelope

Also enclosed are two documents regarding the results of that meeting. One packet lists the suggestions you made during the brainstorming session, and the second identifies the model components. Some of the model components identified are already in place and, with some modification, can easily be utilized in a model program. Other components may require curriculum revisions and possibly development of new curriculum courses to meet the objectives we determine. Some components require budgeting, space, and personnel allocations. We will have to realistically look at alternative solutions.

Our task is to identify the components already in place:

- Determine appropriate methods to coordinate services.
- Identify weaknesses impacting on student retention.
- Formulate obtainable objectives.
- Develop a "workable" model to recruit, retain, and place students without undue financial burdens to the college or create overloads for the instructors and administrative staff.

I appreciate your willingness to help make the Design for Equity: Women In Electronics Project a success. If we can develop and implement a workable model without placing undue stress upon the institution and staff, we will have accomplished a very worthwhile task. Thank you for your assistance and your time.

I look forward to seeing you on December 13.

Sincerely,

Lorayne Baldus, Project Director
Design for Equity: Women In Electronics Project
CVTAE/UW-Stout
218 Applied Arts Building
Menomonie, WI 54751

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Enclosures

Registration Form

**Design For Equity: Women In Electronics
Advisory Board Meeting**

Time: 8:00 a.m.

Date: December 13, 1990

Place: Northeast WI Technical College
Building 6, Room 6207

_____ I will attend the breakfast at 8:00 a.m.

_____ I will not attend the breakfast, but will attend the 8:45 a.m. meeting.

_____ I cannot attend the breakfast or meeting.

Please return this form by November 30, 1990 to:

**Lorayne Baldus, Project Director
Women In Electronics Project
Center for Vocational, Technical
and Adult Education
UW-Stout
218 Applied Arts Building
Menomonie, WI 54751**

The Advisory Board for the Women In Electronics Project met on October 11, 1990, in Green Bay, Wisconsin. A book was prepared for participants containing a list of participants, relevant working materials and current projects completed that are of a similar nature.

The session consisted of the following format:

- Discuss purpose of this project
- Determine why enrollments have not grown
- Identify projects and strategies that have worked
- Determine pieces needed to recruit, retain and place females in electronics in Green Bay, Wisconsin.

An outline of the points covered is attached to the book provided and refers to the material contained in the book. All transparencies were left with John Pogorelc to use in the event he needed to do a presentation. The meeting ended with a brainstorming session on components to be included within the model.

A draft of the model components discussed at the advisory board meeting, the results of the brainstorming session, and a graphic model were sent to the members prior to the December 13, 1990 meeting in Green Bay.

**Women In Electronics Advisory Board
Discussion Outline
October 11, 1990 Meeting**

I. Why This Project?

NOTE-Show Recruit, Retain, Place Transparency

National reports, such as the Department of Labor's "Workforce 2000," forecast that 80 percent of the new labor market entrants will be women, minorities and immigrants by the year 2000. Specific programs which plan and deliver expanded options and opportunities are badly needed. Labor force trends indicate that women can expect to work for about the same number of years as men and for the same reasons: to support themselves and their families. Increasingly, women are providing the sole support or a significant contribution to the support of themselves and their families.

In 1986 Chippewa Valley Technical College staff, Judy Ristow and Diane Pavelski, wrote a project, "Retraining for Entering The NTO-Electronics Field." In this report they noted that women now constitute 43 percent of the labor force and are expected to comprise over half of the workers by 1990, but they are not paid as much as their male counterparts nor are their jobs distributed evenly. In West Central Wisconsin, working women fit into the national average of earning 60 cents for every dollar a man makes and 80 percent of them work in services, sales, and clerical jobs. Nonworking women on welfare are abundant in West Central Wisconsin. It should be noted that Chippewa Valley is considered an economically depressed area due to the percent of its population receiving welfare assistance. Eighty percent of the welfare recipients are single parent families headed by women.

NOTE-Show Transparencies

- Minimum Wage Transparency
- Six Occupations-Majority Women
- VTAE Graduates And Occupations

II. Why Electronics?

Former Wisconsin VTAE Trade and Industry Consultant, Jean Burns, recommended targeting the program area of electronics for the following reasons:

- Market data indicate a shortage of trained workers in this high demand field.
- Electronics includes such highly technical emerging occupational areas as electronics communications, electronics design and packaging, telecommunications and biomedical electronics.
- It has a high placement rate and opportunity for advancement.
- Statewide program enrollments in electronics have dropped 17 percent statewide since 1984-85.
- Program enrollments average 90 percent male statewide. The electronics program area needs a targeted program to increase participation by female students.

III. Why Are Women Not Enrolling?

Many women face severe barriers to entry-level employment or to a self-supporting wage in upgrading of present employment. These barriers are due to limitations that the women themselves have, such as low self-esteem, few marketable skills, and limited work experience and the limitations caused by the changing nature of the labor market such as its declining rural economy and the rapid closing of various manufacturing plants. In addition, these women face a wage barrier due to a "traditional" work ethic. This limits their potential for well-paying jobs even when they have sufficient self-esteem and recent work experience.

NOTE-Show Transparencies

- Glad I'm A Girl, Glad I'm A Boy
- See's A Flyer (Because a flyer declares an occupation opening-women don't necessarily believe it.)
- Escort In (Need to be personally invited and escorted in.)
- Access, Equity and Opportunities
- Barriers (Cultural Barriers)

IV. Solutions

NOTE-Show Transparencies Relating to Materials in Book

- Recruitment-Retention
- Six Basic Goals-Keys to Success
- Basic Strategies
- Program Design
- Support: Organization-Wide
- Coordinator Needed
- Job Success

V. Portland Oregon Project

- Show "B-Fit" Tape
- Essentials of a successful project
 - Identify target groups
 - Controlled, strong, thorough orientation
 - Describe Parameters
 - Go small
 - Stay the Course
- Recruit mature women
 - Average age 36
 - Prior work experience
 - Disciplined to stay the course
 - Know what they want
- Women recruited by women

VI. Findings From Other Projects-Lincoln University, Pittsburgh, PA "Female Access, Introduction to Electronics"

- August 1987-720 hour training program for disadvantaged
- Objectives-See second to last section in book.
- Technical skills are described
- Skills for reading, math and writing
- Career opportunities available
- Enhance sense of worth-"Self-Esteem"
- Highlights of the project
 - Tutoring workshops prior to testing
 - Retention attributed to trust and confidence in the counselor
 - Policies for absences
 - Remedial packets for instruction
 - Success due to strong counseling component

VII. Discussion

Brainstorming elements of a successful model to recruit, retain and place women in electronics in Green Bay, Wisconsin. (See attached documents "Brainstorming Ideas")

Objective: Recruit, Retain and Place Women In Electronics

I. Recruit

- How to "Spread The Word?"
- What groups do you work with?
- What kinds of strategies can we use?
- Administrative support.

II. Retain

- Testing for compatibility-interest?
- Tutoring
- Support Services
 - Child Care
 - Transportation
 - Support Groups
 - Mentoring
- Classroom climate and resources
 - Friendly/chilly?
 - Instructors attitude and acceptance
 - Conducive to student
 - Self-esteem
 - Growth
 - Success
- Textbooks and illustrations

III. Placement

- Jobs available?
- Women/person of color in positions?
- Employers accepting

IV. Ongoing Support

Seven Strategy Areas

- Promotional (publicity-recruitment)
- Staff development (training-in-service-equity)
- Affirmative guidance
 - Retention
 - Career awareness
 - Information
- Curricular
 - Instructional methods
 - Materials
 - Course and program objectives
- Administrative
 - Policies
 - Procedures
 - Leadership
- Classroom/school environment
- Parent/Community

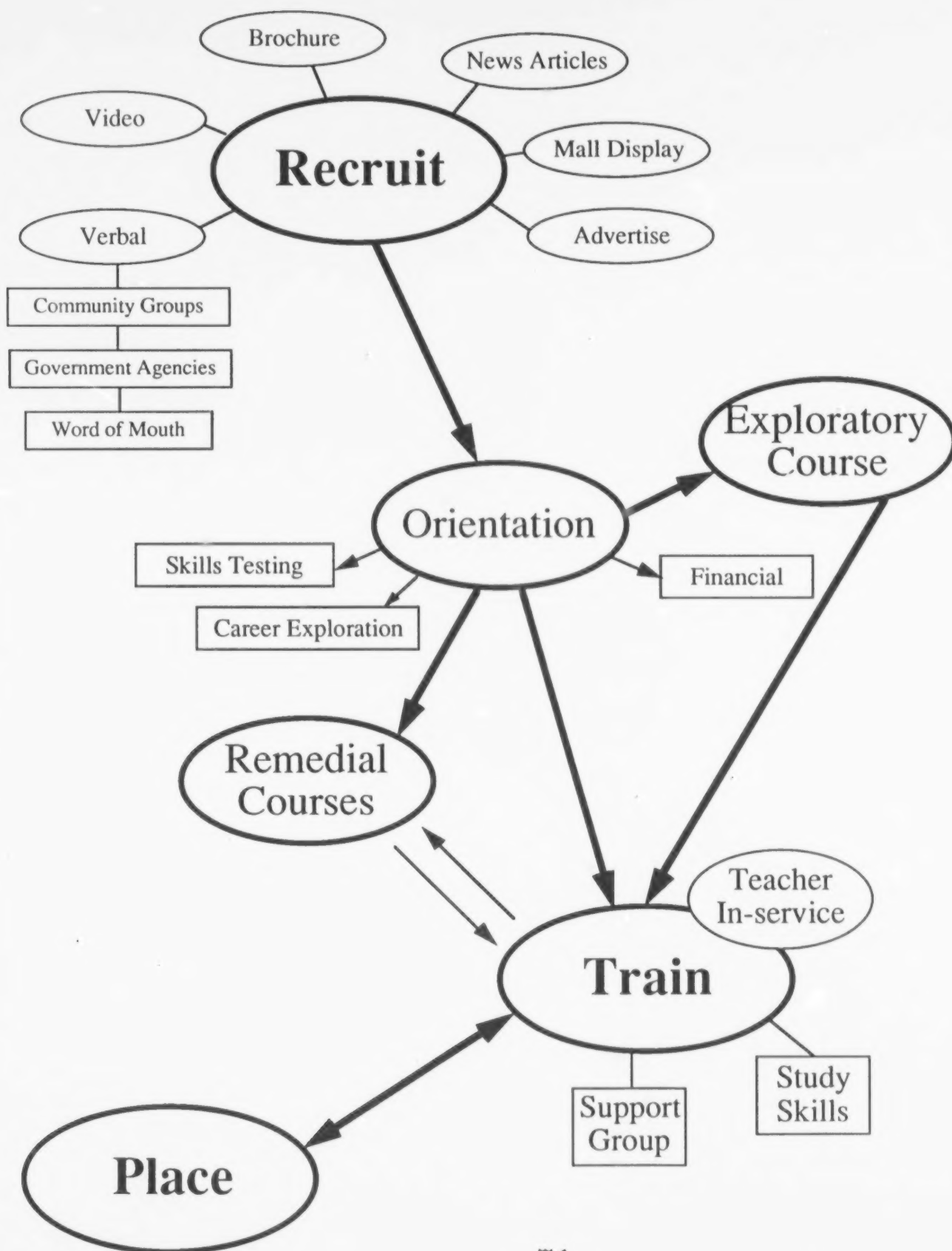
Key in all of this are the key players-why should they buy into this? Problem is how to get instructor commitment.

Need to Alleviate for the Student

- Math anxiety
- Courage to enter NTO areas
- Fear of unemployment
- Sexual harassment in class and on the job
- Fear of loss of femininity-Not being attractive to men
- Fear of being labeled as intelligent, competent-i.e. men won't like you if you win or beat them.

Formula For Success

1. Coordinated as an all-school effort.
2. Industry/cooperative arrangement
 - training
 - jobs
 - support
3. Quality instructors trained in equity-Key To Success
4. Female instructors or counselors-Key To Success
 - mentors
 - support services
5. Remediation/tutorial services provided and utilized
 - Pre-testing for skill building
 - Instructor intervention
6. Barriers addressed
 - Child care
 - Financial
 - Cultural bias



MODEL COMPONENTS

- Target Group:**
- Mature women with need for income/security
 - High school math and science women

- Training Organization:**
- Administrative Support
 - Space commitment
 - Budget allocations
 - Staff allocations
 - Coordination between continuing education and instructional services to provide non-credit skill builder, and credit course on a flexible basis.
 - Continuing education, non-credit skill building.
Introduction to:
 - Drafting
 - Electronics
 - Welding
 - Need to speak to full time classes
 - Instructional Services
 - Credit courses
 - Part-time basis
 - Pre-Admission Mini-Courses (Orientation)
 - Assessments and career counseling -math & reading screening
 - Building self-esteem
 - Financial planning
 - Financial aids availability
 - Remedial skills/mini courses for math/reading improvement
 - Career exploration
 - Quality instructors trained in equity knowledges
 - Math instructors (preferably female)
 - Tutorial services made available
 - Support Services Available
 - Mentors
 - Child Care

- Advertising and Outreach:**
- Creative aspects of jobs emphasized (designing, inventing, testing)
 - Advertise "screening and selecting" aspects (competitive qualifications)
 - Higher wage opportunities
 - Brochures
 - Publications
 - Media news releases

- VTAE/Business and Industry Linkage:**
- Member of advisory board
 - Job placement
 - Cooperative placement
 - Internship
 - Scholarship
 - Core people linkage/VTAE-Industry

- Training in Equity Knowledges:**
- Attendance at statewide equity meeting
 - Staff in-service
 - Collaboration with CESA equity training

The greatest need is to coordinate for an "all school" effort, bringing together counseling/tutorial services, financial aid, flexible scheduling, continuing education, remedial services and the public relations office. The greatest deterrents for women are child care services and financial need.

For all students it is important for instructors to intervene for those students needing remediation; to be sure that tutorial, support services are fully utilized.

**Brainstorming Ideas
Advisory Board Meeting
October 11, 1990**

Instructors:

- Hire female instructors
- Industry "loan" or teacher/industry swap
- Joint buying of instructor; industry and school
- Industry-adopt a school
- Equity training for instructors

Students

- Summer internships
- Advisors/peer advisors/mentoring
- Student support group
- Recruiting
 - Displays i.e. laser, robots, videotape
 - "Hands-On" electronics @ schools, malls, etc.

Past Graduates

- School facilitated support group
- Mentoring program
- Track dropouts and find out their reasons for leaving the program

Advisory Board

- Expanded with women members
- Partner's in training program/industry representatives
- NTO student participation
- Establishment of goals.

Industry

- Opportunities for gainful employment
- Cooperative effort with school to provide:
 - Training opportunities
 - Scholarships
 - Second year financial aid with guaranteed employment required after graduation
 - Internships/coop arrangements
 - Shadowing

School

- Outreach/Coordinated Advertising
 - News articles on NTO
 - Brochures targeted to women
 - VTAE school newspaper
 - VTAE publications of class offerings
 - Classified ad
 - High school newsletters
- Target Groups
 - Shopping malls-displays (video, brochures, robots, hands-on experiments with role models staffing display)
 - High Schools
 - Career awareness night with parents, students, graduates and instructors
 - Articulation with math and science
 - Open house school-wide
 - Community Organizations (Need to clarify perceptions of careers)
 - AAUW
 - Rotary
 - Choices group
 - Social services agencies
- Training Organization
 - Flexible scheduling available
 - Equity-trained instructors
 - Child care
- Career Orientation
 - Customized assessment process (diagnostic evaluation)
 - Tutorial services, advertised and available
 - Pre-testing tutorial services
 - Enrollment opportunities
- Financial Advice
 - Budgeting of time and money
 - Financial aid available
- Coordination For All-School Involvement
 - Competency-based instruction
 - Administrative/instructional support staff
 - Continuing education
 - "Hand-holding," counseling for first semester

Appendix G

**Minutes
Advisory Board Meeting
December 13, 1990
Green Bay, Wisconsin**

The second meeting of the advisory committee was held in Green Bay, Wisconsin on Thursday, December 13, 1990. Additional working materials from the Nuts and Bolts of NTO were provided. Two copies of this book have been ordered for John Pogorelec.

Participants discussed the components necessary for a successful nontraditional training program. The drop out rate for electronics students has been consistently high with very few female students entering the program and fewer finishing. Reasons given for non-retention included lack of knowledge regarding requirements of program, lack of math skills, lack of self-esteem, and lack of interest. An attitude, "I can, I am capable," with a positive attitude helps to develop aptitude. A suggestion was made to survey those who left the program, both male and female, to determine reasons for leaving.

Several suggestions were made to increase retention:

- Establish mentor program
- "Up-front" course requirements (math proficiency)
- Orientation
- Job shadowing-career exploration-identify career ladders
- Employer training program
- Grouping of female students in class and laboratories

Outreach programs were discussed. A difficulty that needs to be overcome is the job description, "electronics." The perception of what it is keeps people from entering. Is there a different terminology that can be used? Massive marketing techniques need to be utilized with target areas flooded with information. Career forums with "hands-on" activities help create interest.

Before recruiting can occur, the program's support services and well written documented curriculum must be in place if students are to be retained and trained. Most VTAE colleges have the component pieces in place, but some areas need strengthening, i.e., career planning, peer mentoring, support groups, lab tutoring, and instructor intervention to ensure student use of remedial services. A strong well-structured orientation component allows women to begin forming networks.

The advisory committee, made up of industry employee-employers, role models, past graduates, administrators, instructors and students, can be the support group for the entire program. It can provide direction for the program and provide mentors for the students. The members felt the advisory committee could be the strongest part of the support group to help in the recruitment and retention of the student and ultimately, in the success of the program.

The electronics program at Green Bay was discussed. A 'pre-tech' course had been taught but was not successful and dropped. It was estimated that approximately 50 percent of the electronics students, statewide, dropped out of the program. The problems identified were:

- Those enrolled had math difficulties
- Some found material too difficult
- No pre-requisites or competencies required

Some solutions suggested were:

- Competency tests/assessments-used as a learning device to help place person in areas where they can succeed
- "Up-front" information on competencies needed for program
- Assess and develop competencies to succeed
- Restructure curriculum

A point was made that it is assumed women need remedial work and pre-training. Some can be successful and be trained without pre-tech courses, whereas some males want pre-aptitude type training. It was determined that a better process of assessing and career planning need to be utilized.

Connie Swift, Fox Valley, discussed the "Redirection Project," that was used at the Fox Valley Technical College. The services are still available although the project has ended. It was highly successful in that it raised the awareness level of all personnel that career planning and awareness is essential in making the right career choice and successful completion of training. More and more programs are mandating up-front work with skill testing and career exploration. There is a lag-time while the program is being implemented, but the student success ratio is worth it.

Ronnie Meleny, T&I Consultant, WBVTAE, shared the results of a joint DPI and VTAE program planning which has an impact on high school curriculum. It is called a tech-prep curriculum with required, measurable, competency-based instruction in four skill areas; communication, physical science, mathematics, and keyboarding. These competencies allow students to go on to higher education or on to a job. This is to be implemented in schools next year. It is mandatory that we have pre-tech courses for everyone if we want to retain them.

Marjorie Wood, Apprentice Consultant, WBVTAE, summed up components needed if a model is to be successful:

- Linkages with industry-a guaranteed job at the end with promotional and career possibilities
- Industry/internship courses (similar to apprenticeships)
- Program coordinator is absolutely essential. Funding is needed to hire coordinator
- A commitment from administration is essential or it will not happen
- Women have to feel welcome in program or they will not enter or stay
- Strong recruitment efforts
- Adequate information regarding career and competencies needed
- Access to persons with authority-a female authority figure for female students
- Pre-tech courses need to be an integral part of curriculum and taught by full time instructors. It cannot be a secondary program, there must be articulation between continuing education and full time education.

The group summarized the greatest needs for a model to be successfully implemented. They are:

- District commitment with funding for staff allocation
- Need to identify a coordinator
- Need for a strong advisory committee
- Pre-technical courses

The time line for implementation was discussed. Concern was expressed over the time needed to recruit, train and ultimately place women in jobs. Budgetary constraints and administrative commitment were immediate problems because of the need for coordination activities to revise and update curriculum and effectively utilize services available. The need is immediate but Green Bay has one female student in the second year program and three in the first year. Recommendations were made to use services currently available to retain those already in the program. Additional suggestions were made for advertising and recruiting females with educational backgrounds suitable for the electronics field. The long-range program is to structure all services to eliminate the excessive student drop out rate and attract women into the program. A short-term program will also need to be implemented to attract women and provide additional role models and peer mentors for future students. This remains as a project objective identified by members that needs to be addressed!